SCREENING SITE INSPECTION REPORT
FOR
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA

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Prepared by: Gary L Krueger Date: 5/17/91
Gary L. Krueger
Project Manager
Site Assessment Unit
Program Development Section
Ground Water and Solid Waste Division
Minnesota Pollution Control Agency

Steven A-Meger Date: 5/17/91
Steven Anderson-Meger
Hydrologist
Site Assessment Unit
Program Development Section
Ground Water and Solid Waste Division
Minnesota Pollution Control Agency

Reviewed by: Ronald R Swenson Date: 5-20-91
Ronald R. Swenson
Supervisor, Site Assessment Unit
Program Development Section
Ground Water and Solid Waste Division
Minnesota Pollution Control Agency

Approved by: John N Holck Date: 5/21/91
John N. Holck
Chief, Program Development Section
Ground Water and Solid Waste Division
Minnesota Pollution Control Agency

INTERPLASTIC CORPORATION
SCREENING SITE INSPECTION
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1.0 SUMMARY

Interplastic Corporation (Site) is located in northeast Minneapolis in a light industrial area. Beginning in 1966, the Interplastic Corporation began producing polyester resins used in the manufacture of plastics. Various organic chemical liquids, including acetone and sytrene, are stored in over a dozen above and under ground tanks.

In 1972, Minnesota Pollution Control Agency (MPCA) first received a complaint alleging that drums containing hazardous wastes were buried on site. In 1985 and 1986, Interplastic Corporation installed four shallow monitoring wells. Laboratory analyses of ground water samples obtained from these wells indicated that acetone and styrene had been released to ground water. These compounds, both of which are stored and have been spilled on site, have been detected at concentrations above the Recommended Allowable Limits (RALs) for drinking water as set by the Minnesota Department of Health.

In 1986, two separate electromagnetic surveys were conducted at the Site. The first survey was performed by a consultant hired by Interplastic Corporation and was conducted over only about half of the Site, not including the alleged drum burial area. Results of the survey indicated only one relatively small anomaly. Soil borings drilled through the anomalous area did not encounter signs of contamination in the immediate area. A second electromagnetic survey was performed over the remaining portion of the area by the Minnesota Department of Natural Resources (MDNR) and MPCA. Results of this survey revealed large anomalies present beneath the surface which were interpreted as one large, or a number of smaller metallic objects. This surveyed area included the alleged drum burial site which was not originally studied.

Beginning with the installation of the monitoring wells, the company monitored the wells and provided the MPCA with the results. Ground water monitoring results have displayed large variations in styrene and acetone concentrations. In addition, monitoring results indicate that other organic compounds are present in ground water. In January 1990, well monitoring by the company was suspended in anticipation of MPCA performing a Screening Site Inspection (SSI). The Site was added to the Minnesota Permanent List of Priorities (State Superfund) in December 1990 to formally initiate the clean up process.

2.0 INTRODUCTION

The MPCA, working under a Cooperative Agreement with the U.S. Environmental Protection Agency (EPA), conducted a non-sampling SSI at the Site.

In April 1986, the Site was placed on the EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) inventory and a Preliminary Assessment (PA) was completed.

MPCA staff reviewed the existing ground water quality data for the Site and determined that the objectives of the SSI were met without a need for additional field work under the pre-remedial Superfund program. In December 1990, the Site was placed on the State of Minnesota Permanent List of Priorities (PLP) to begin the Remedial Investigation/Feasibility Study clean up process.

3.0 SITE DATA

3.1 Site Description

The Site is located at 2015 Broadway Northeast in northeast Minneapolis, Township 29 N, Range 24 W, Section 13. See Figure 3.1 for Site location. Interplastic Corporation is an active facility, nearly an acre in size, which produces polyester resin used in the manufacture of plastics. The facility also generates about 12,000 gals/yr of waste acetone and 6,000 gals/yr of polyester resin wastes. Interplastic Corporation is a state and federal designated hazardous waste generator.

The primary land use of the surrounding area is commercial and light industrial. Interstate 35-W bounds the property on the northwest. The nearest residential area is approximately 1/3 mile to the west of the Site. Appendix A presents a four-mile radius map of the area. A Site map and photos are presented by Figure 3.2 and Appendix B. The majority of the Site ground surface is paved and fenced. The southern portion of the Site contains an office/production building. Adjacent to the north side of the building, styrene, acetone and other organic chemical liquids are stored in about a dozen above and below ground storage tanks. This area is paved with concrete and is fenced. The northern most portion of the property which is used for truck and van parking is paved with asphalt and is unfenced. A railroad spur along the east boundary of the property is used to unload production chemicals from rail tanker cars, and is not paved or fenced.

3.2 Site History

Interplastic Corporation has operated the facility since 1966. Underground tanks for storage of styrene and acetone are reported to have been first installed in 1968 and 1969, respectively.

The MPCA first became involved with the Site in early 1972 when a complaint was forwarded from the Minnesota Department of Public Works stating that 40 to 80 55-gallons drums containing hazardous waste had allegedly been buried on the northern half of the Site. In July 1985, as part of a resin manufacture license renewal, the city of Minneapolis ordered the company to install a ground water monitoring system. In December 1985, three shallow monitoring wells were installed on-site (Twin City Testing, 1986a). A fourth well was installed in early 1986. Sampling results of these wells indicated ground water contamination by styrene, acetone and other organic compounds (Twin City Testing, 1986b; 1986c).

In early April 1986, the Site was recommended by MPCA staff to enter the Preliminary Assessment/Site Inspection program (PA/SI) and a PA was completed. However, in mid-April the Site was referred over to the MPCA Hazardous Waste Division.

In 1986, the company hired a consulting firm to conduct an electromagnetic (EM) survey of the property in response to the allegation of buried drums (Hatcher, 1986b). This survey was conducted over only one-half of the property and revealed one anomaly. Soil borings installed in the area of this anomaly did not show signs of contamination. Later the same year, the MDNR (1986) and MPCA, conducted a second EM survey over the property including area not previously surveyed. This follow-up survey revealed several anomalies in the area of the alleged buried drums. To date, additional soil borings have not been installed to investigate these anomalies.

FIGURE 3.1

SITE LOCATION MAP

INTERPLASTICS

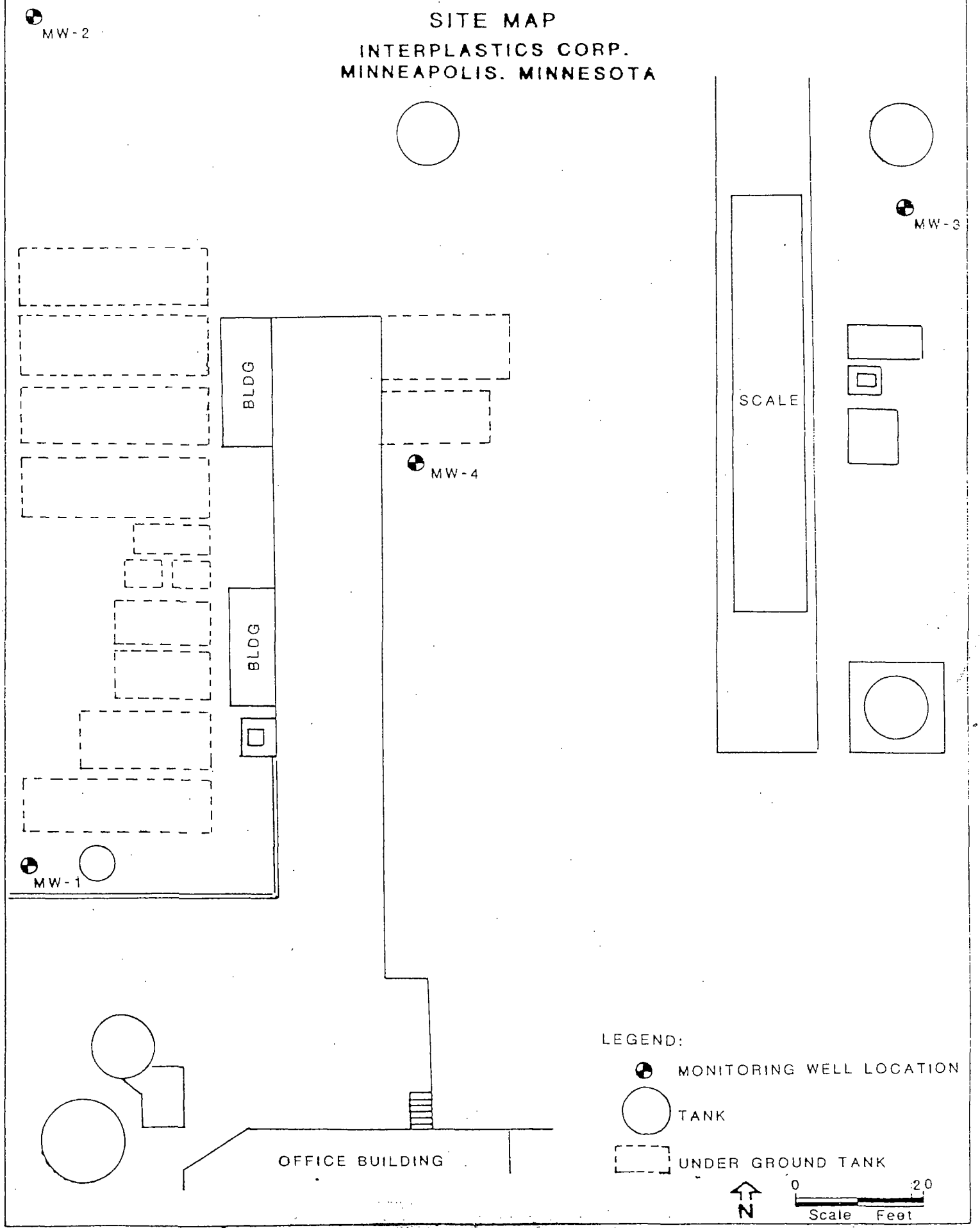
MINNEAPOLIS, MINNESOTA

(Twin City Testing, 1986b)

FIGURE 3.2

SITE MAP

INTERPLASTICS CORP.
MINNEAPOLIS. MINNESOTA



(Twin City Testing, 1986b)

In 1987, Interplastic Corporation began submitting quarterly ground water monitoring reports to MPCA Hazardous Waste Division after installation of on-site monitoring wells (Precision Environmental Service, 1987). Results of monitoring have indicated varying levels of styrene and acetone in ground water. Other volatile and semi-volatile organic compounds have also been detected during monitoring. Interplastic Corporation discontinued ground water monitoring in early 1990, based on the anticipation of a planned SSI by MPCA. Over the past several years, numerous spills of styrene, acetone, and polyester resin, have been reported from the Site. The MPCA has also received complaints from local residents regarding odors from the facility. The company has been involved with the MPCA Air Quality Division to resolve air emission problems from the facility.

In August 1989, the Site was referred from MPCA Hazardous Waste Division back to the MPCA Site Assessment Unit (SAU). A SSI of the Site was scheduled for 1990. The SSI was to include soil borings and additional ground water monitoring. In August 1990, MPCA SAU staff reviewed site history along with all available analytical data and determined sufficient information had been gathered to meet the objectives of the planned SSI. Therefore, the planned SSI field work at the Site was canceled. In December 1990, the Site was added to the PLP. MPCA Site Response staff are now in the process of overseeing the Remedial Investigation/Feasibility Study cleanup process at the Site.

4.0 SSI OBJECTIVES

The objectives of a SSI are stated by EPA in a directive outlining pre-remedial strategies. The directive states that sites receive a SSI to: 1) collect additional data beyond the PA to enable a more refined preliminary Hazardous Ranking System (HRS) score; 2) establish priorities among sites most likely to qualify for the National Priorities List (NPL); and, 3) identify the next critical data requirements for the Listing Screening Inspection (LSI) step (U.S. EPA 1988).

Initially, MPCA staff prepared and submitted a SSI work plan to EPA Region 5. Specific objectives of the workplan were to confirm ground water and soil contamination at the Site. The SSI was scheduled to be conducted during September 1990. The work plan called for 3 to 4 soil borings on-site and sampling of the existing on-site monitoring wells. However, MPCA staff subsequently determined that sufficient information was known about the Site, and that additional pre-remedial field work at the Site was not necessary for the purposes of HRS scoring.

5.0 HYDROGEOLOGY

5.1 Regional Geology

The Site is located within the Western Lake section of the Central Lowlands physiographic province of North America.

Bedrock geology consists of Cambrian and Ordovician age sedimentary rocks that lie within the northwestern portion of the Hollandale embayment, along the northern edge of the Twin Cities Basin - a bedrock depression encircling the Minneapolis - St. Paul metropolitan area. The bedrock surface is characterized by gently rolling terrain with occasional incised bedrock valleys as a result of glacial meltwater streams.

A brief description of the the regional bedrock sequence in the vicinity of the Site, from top to bottom, is as follows (Hogberg, 1972):

- Platteville Formation - dolostone, light-gray to buff, thin to medium-bedded, shaly

- Glenwood Shale - shale, greenish-gray, fissile, sandy

- St. Peter Sandstone - sandstone, light-gray, massively bedded, well sorted, medium-grained, poorly cemented, quartzose, approximately 20-foot thick silty to shaly bed near base

- Prairie du Chien Group - dolostone, buff, thin to thick-bedded, silt and sand rich, medium-grained, with sandstone beds and silt-size dolomitic matrix

- Jordan Sandstone - sandstone, light-gray, massively bedded, medium to coarse-grained, well sorted, poorly cemented, quartzose

- St. Lawrence Formation - dolostone, gray to tan, silty to sandy, argillaceous, glauconitic in upper part

Because the St. Lawrence Formation is considered to be an extensive confining bed below the aquifer of concern (Prairie du Chien - Jordan aquifer), lower-lying bedrock units are not discussed in this report.

The regional Quaternary geology is generally characterized by glaciofluvial outwash and glacial till deposited by the Superior Lobe, and the Grantsburg Sublobe of the Des Moines Lobe. Glacial action largely determine landforms which include terminal moraines, a large kame, kettle lakes, and linear drainage sags (Stone, 1966).

Recent surficial geology in the region consists mainly of a mantle of fine to medium-grained sands with silts, peats, and clay lenses (Twin City Testing, 1986a). These deposits occur as bedrock valley fill, post-glacial lacustrine sediments, organic deposits, peat, alluvium, and artificial fill (MGS, 1988).

5.2 Local Geology

The Site has been developed for industrial use and presently is relatively flat-lying. Based on three on-site borings, soils on the Site consist of 1 to 7 feet of sand to silty sand fill, followed by a thin discontinuous layer of hemic peat, which in turn is underlain by sands with silt and gravel. The natural units appear to lie nearly horizontal. This sequence is suggestive of ancient swamp overlying glacial meltwater stream alluvium (Twin City Testing, 1986a).

Because on-site borings do not penetrate bedrock, a well log for a nearby production well (Superior Dairies, unique #200262), is presented below as a representation of on-site stratigraphy (Weston, 1985). This well is located about 1000 feet southeast of the Site and is assumed to be at approximately the same ground surface elevation.

DEPTH (feet)	LITHOLOGY/STRATIGRAPHIC UNIT
0 to 5	fill
5 to 13	peat
13 to 37	sand and boulders
37 to 51	shale, sand, and boulders
51 to 82	Platteville Formation
82 to 85	Glenwood Formation
85 to 252	St. Peter Sandstone
252 to 371	Prairie du Chien Group
371 to 465	Jordan Sandstone
465 to 473+	St. Lawrence Formation

The possible presence of Decorah Shale as a local buried knoll or boulders has been reported at a depth of about 25 feet at the Old Hopkins/Allied facility immediately south of the Interplastic Site (Weston, 1985). A portion of the Platteville Formation has been removed from an old quarry located northwest of the Site toward Interstate 35-W (Hatcher, 1986a).

5.3 Regional Ground Water

Hydrogeologic units in the unconsolidated Quaternary overburden of the region have been described as outlined below (CDM, 1990):

HYDROGEOLOGIC UNIT	DESCRIPTION
Unit I local water table aquifer	° Recent Alluvium - fill, recent alluvium, peat ° New Brighton Formation - fine sands overlying lacustrine silts
Unit II regional aquitard	° Twin Cities Formation - reddish-brown to gray silty clay, clayey sandy till
Unit III regional aquifer	° Hillside Sand - outwash, reddish-brown, medium to coarse-grained sand, with occasional gravels, silty sand and red sandy tills, clayey till locally present at base

The relationship between Paleozoic bedrock hydrogeologic units and rock units is summarized below (Balaban, 1989):

HYDROGEOLOGIC UNIT	ROCK UNIT
Confining Layer	° Decorah Shale
	° Platteville Formation
	° Glenwood Formation
St. Peter Aquifer (with basal confining layer)	° St. Peter Sandstone
Prairie du Chien -	° Prairie du Chien Group
Jordan Aquifer	° Jordan Sandstone
Confining Layer	° St. Lawrence Formation

More specifically, although small amounts of water may be obtained locally from fractures and solution cavities in the Platteville Formation, together with the Glenwood Formation, these formations tend to function as a confining bed (Delin and Woodward, 1984).

The St. Peter Sandstone serves as an aquifer with flow occurring through intergranular spaces and fractures. Yields of wells typically range from 100 to 250 gal/min with yield reported as high as 1200 gal/min. Siltstone and shale present at the base of the formation act as a lower confining bed restricting vertical ground water flow (Delin and Woodward, 1984).

Despite their different lithologies, the Prairie du Chien Group and Jordan Sandstone are hydraulically connected and function as a single hydrologic unit due to the absence of a continuous confining bed between the two formations. Small differences in hydraulic head between the two units may occur due to impermeable beds of localized extent (Kanivetsky and Walton, 1979). The Prairie du Chien - Jordan aquifer is the most extensively used aquifer in the region. Well yields typically range from 500 to 1000 gal/min. Flow occurs through joints, fractures, and solution channels in the Prairie du Chien Group and through intergranular spaces in the Jordan Sandstone (Delin and Woodward, 1984).

The St. Lawrence Formation generally acts as a confining bed throughout the region. This is due to the restriction of vertical ground water flow by the presence of silty and shaly beds (Delin and Woodward, 1984).

Estimates of hydraulic conductivity for aquifers in the region are summarized below:

AQUIFER	HYDRAULIC CONDUCTIVITY
	Average, horizontal (CDM, 1990)
Hillside Sand (Unit III)	209 ft/day
Prairie du Chien	123 ft/day
Jordan	33 ft/day
	Modal value (Kanivetsky and Walton, 1979)
St. Peter	10 ft/day or 3 m/day
Prairie du Chien - Jordan	46 ft/day or 14 m/day

The wide range in values of these parameters suggests there is a large degree of local and regional variation in texture, density, and water-bearing characteristics within hydrogeologic units.

Potentiometric surface maps of aquifers in the Hollandale embayment indicate that major rivers influence the direction of ground water flow (Delin and Woodward, 1984). In the study region, ground water in bedrock generally flows to the south-southwest, toward the Mississippi River (Kanivetsky and Walton, 1979).

5.4 Local Ground Water

Although till units and aquitards are reported to occur in the unconsolidated surficial glacial deposits located elsewhere in the region, currently available information does not document the presence of specific confining beds in the unconsolidated sediments at the site vicinity. In particular, the Twin Cities Formation till aquitard previously described is absent in the area of the Site (CDM, 1990).

Because bedrock confining beds are not continuous within a three-mile radius of the Site (e.g., the Mississippi River Valley), the aquifers in the study are considered to be hydrologically interconnected. The aquifer of concern is the Prairie du Chien - Jordan Aquifer.

Depth to ground water is approximately 15 feet. However, on-site water level measurements indicate wide variation in water table elevations which is reported to indicate local variability in ground water flow directions which may be caused by local pumpage, or recharge of unknown origin (Hatcher, 1986a). Ground water flow to the south-southwest is reported in the vicinity of the Site (Twin City Testing, 1986a; 1986b; 1986c). Presently, the majority of the Site is paved and therefore, on-site infiltration and recharge is considered to be minimal.

An undetermined number of bedrock production wells are located within a 3-mile radius of the site. Well water uses include public supply, food production, industrial cooling, and irrigation (golf courses) wells. The nearest public supply system is located approximately 2 miles northeast of the Site in the City of St. Anthony which serves a population of approximately 8,000. St. Anthony has three municipal supply wells, one open to the Prairie du Chien - Jordan aquifer, and two open to the Jordan Formation only. More information on other major pumping wells in the area is presented in a report by CDM (1990).

6.0 SURFACE WATER

The Site is located within the Upper Mississippi River Basin, approximately 1.4 miles northeast of the river itself. Annual normal precipitation is 24 to 28 inches based on regional precipitation data from the years 1951 to 1980. Average annual runoff is 4.13 inches based on 90 years of record from a stream-gaging station located several miles downstream on the Mississippi River at St. Paul (Gunard et al., 1990).

The Site is largely paved and generally flat lying. Surface water runoff enters storm drains of the city of Minneapolis storm water system and eventually enters the Mississippi River.

7.0 RECONNAISSANCE INSPECTION

7.1 Site Visits

Two site visits were conducted by MPCA Site Assessment Unit staff. On December 14, 1990, Steven Anderson-Meger and Fred Campbell of MPCA held an interview with representatives of Interplastic Corporation. General operations of the facility and the status of MPCA involvement with the Site was discussed, and a walking tour was conducted on the property. On April 1, 1991, Steven Anderson-Meger and Gary Krueger of MPCA conducted an off-site reconnaissance and photographed the Site (see Appendix B).

8.0 PREVIOUS STUDIES

8.1 Ground Water Monitoring

The following discussion summarizes the results generated from several studies previously conducted on the Site. However, given the amount of information contained in these studies, for full details the reader is referred to the original reports (see Appendix C, and Section 9.0 References).

In December 1985, Twin City Testing was contracted by Interplastic Corporation to perform a subsurface contamination investigation of the Site to "evaluate the environmental impact associated with the maintenance of several buried storage tanks and dispensing line facilities" (Twin City Testing, 1986a). Three shallow monitoring wells, 21.5 to 25 feet deep, were installed. The wells were sampled and analyzed for selected volatile organic compounds as part of this study. Acetone (340,000 ug/l) and styrene (300,000 ug/l) were detected in ground water samples. Both of these compounds are known to have been stored and spilled on-site. In addition, naptha compounds (200,000 ug/l) and several unidentified peaks were also detected.

The three monitoring wells were resampled in February 1986 and analyzed for inorganics, volatile organic compounds, base neutral compounds, and pesticides (Hatcher, 1986a). Acetone and sytrene were detected in ground water samples at levels somewhat lower than before at concentrations of 16,600 ug/l and 56,000 ug/l, respectively. Ethylbenzene was also detected at 67,000 ug/l.

In September 1986, the wells were again resampled along with a fourth monitoring well which was installed on-site. Acetone and styrene were again detected at levels of 450,000 ug/l and 300,000 ug/l, respectively. A number of unidentified peaks were also detected (Twin City Testing, 1986b). Resampling of the four

well was repeated in November 1986 and acetone and styrene were once again detected at levels of 28,000 ug/l and 22,000 ug/l, respectively (Twin City Testing, 1986c).

Beginning in June 1987, Interplastic Corporation began to submit quarterly ground water monitoring results directly to MPCA Hazardous Waste Division. In August 1988, MPCA staff expressed concern to Interplastic Corporation regarding the wide fluctuation of styrene concentrations reported over the past few years of ground water monitoring. It was suspected that a problem may exist with the holding time of samples prior to laboratory analysis. On August 9, 1988, the wells were resampled and it was shown that duplicate samples from well MW-1 displayed a variation in styrene concentrations with respect to holding time; 610,000 ug/l with 24 hour holding time, versus 346,000 ug/l with standard holding time, (Precision Environmental Services, 1988d). MPCA staff concluded that variations in reported styrene concentrations appeared related to sample holding times.

Interplastic Corporation discontinued ground water monitoring in early 1990, based on the anticipation of a planned SSI by MPCA.

As presented below, volatile organic compounds in on-site ground water have been detected at concentrations hundreds to thousands of times greater than the Recommended Allowable Limits (RALs) for drinking water in private wells, as established by the Minnesota Department of Health.

	Maximum Concentration	Date	RAL	RAL Exceedance Factor
Acetone	450,000 ug/l	9-26-86 (a)	700 ug/l	640 times
Styrene	1,200,000 ug/l	12-8-87 (b)	500 ug/l	2,400 times
Ethyl benzene	910,000 ug/l	12-8-87 (b)	700 ug/l	1,300 times

(a) Twin City Testing, 1986b

(b) Precision Environmental Services, 1987

More recent monitoring results of the wells sampled in February 1989 have shown a decrease from these levels with acetone and styrene concentrations reported at 26,000 ug/l and 53,000 ug/l, respectively (Precision Environmental Services, 1989b).

8.2 Electromagnetic Surveys

In 1986, two separate electromagnetic surveys were conducted at the Site. The first survey was performed by Hatcher Inc., a consultant hired by Interplastic Corporation and was conducted over only about half of the Site (Hatcher 1986b). Results of the survey indicated only one relatively small anomaly. Soil borings drilled through the anomalous area did not encounter signs of contamination in the immediate area. A second electromagnetic survey was performed over the remaining portion of the area by the MDNR (1986) with the MPCA. Results of this survey revealed large anomalies present beneath the surface which were interpreted as one large, or a number of smaller metallic objects. This survey area included the alleged drum burial site which was not included in the initial study. To date, Interplastic Corporation has not taken action to fully investigate this anomaly.

8.3 Air Quality

Air monitoring at the Site under the Superfund pre-remedial program was not conducted. However, during the installation of monitoring wells, chemical odors were detected in soils beginning at 6 feet below the surface.

The MPCA has also received numerous complaints from local residents regarding odors from the facility. In 1989, Interplastics installed a thermal oxidizer to control air emission from active operations at the plant. The company has been involved with the MPCA Air Quality Division to resolve air emission problems from the facility.

9.0 MIGRATION PATHWAYS

9.1 Ground Water Pathway

There has been an observed release of contaminants to ground water at the Site. Specifically, styrene and acetone compounds, both which have been stored and spilled on-site, have been detected in monitoring wells on Interplastic Corporation's property. The capacity of above and below ground chemical storage tanks on site, is estimated to be approximately 131,000 gallons.

The nearest identified municipal drinking water well to the Site is part of the city of St. Anthony drinking water supply system (City well # 3). This well is located approximately 2.2 miles northeast of the Site and draws water from the Prairie du Chien - Jordan aquifer at a depth of approximately 300 feet below the ground surface.

The St. Anthony municipal supply system serves about 8,000 people. The surficial aquifer in which water quality monitoring at the Site has been conducted shows contamination and, due to the absence of documented confining beds at the Site location, is considered to be connected to the underlying Prairie du Chien - Jordan aquifer. Presently, the St. Anthony municipal supply system undergoes activated carbon treatment due to unrelated contamination source (CDM, 1990). Other well uses in the area include food production industrial cooling and golf course irrigation.

9.2 Surface Water Pathway

Surface water has not been sampled as part of any past investigative work. The migration of rate contaminants from the Site via surface runoff is probably low since contamination has been found in subsurface soils. Spills from above

ground storage tanks and railway tanker cars have been reported to have occurred in the past. Surface runoff enters the city of Minneapolis storm water system and eventually enters the Mississippi River.

The Mississippi River is the closest downslope surface water from the Site, approximately 1.5 miles southwest of the facility. Any overland flow would enter the Mississippi River downstream from the southern-most drinking water intake for the city of Minneapolis. No other drinking water intakes exist within 3 miles downstream of any probable point of entry of contaminants. However, given the distance to the river and the presence of storm water drains on-site, direct overland flow of contaminants from the facility is highly unlikely. Storm water discharge from the Site to the Mississippi River via storm water sewer lines the Mississippi would also enter the river several miles downstream from city drinking water intakes. It should be noted that a shut off valve to the storm water drain is located within the outdoor storage tank area which would allow potential spills or leaks in this area to be isolated from storm sewer lines.

9.3 Air Pathway

When soil borings were installed, chemical odors in soils were first encountered at 6 feet below the surface. Thus, it appears unlikely there would be a release to the air from subsurface contamination. Much of this area has since been paved.

Interplastic has an air emissions permit from the MPCA Air Quality Division. There have been reported releases of volatile organic compounds from by-passes of pollution control equipment in the past. In one incident in December 1990, complaints were made to MPCA and the city of Minneapolis by area businesses and

residents regarding solvent-like odors in sanitary sewer lines along Broadway Avenue. The odors were alleged to be a result of the discharge of air scrubber waste water from the Site facility.

There is a potential for air releases from the facility since large quantities of hazardous materials are actively handled at the Site. However, air releases of contaminants in soil are considered minimal because the majority of the site is presently paved.

9.4 Direct Contact

The outdoor tank storage area of the facility is paved and fenced. Storm water and spills in this area are diverted to on-site storm drains equipped with flow shut-off valves. The northern portion of the property, which is primarily used for truck parking, is paved and unfenced. The railroad spur east of the property, which is used for the unloading of production chemicals from railroad tanker cars, is unpaved and also unfenced. There have been reported spills of hazardous materials in this portion of the Site.

Direct public contact to the tank storage area is unlikely since that area is fenced. There is, however, a potential for direct contact by the public to the railroad spur chemical unloading area.

9.5 Fire and Explosion

Hazardous materials are stored in over a dozen above and below ground storage tanks at the Site. These tanks are permitted by the city of Minneapolis and the MPCA. There have been reports of buried drums at the Site. Electromagnetic surveys previously conducted have indicated metallic objects below the ground surface.

There have been no reports of uncontained fires at the Site. However, there have been a number of contained fires which have occurred in a thermal oxidizer associated with air emission control.

A fire hazard may exist since the company handles large amounts of hazardous chemicals.

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Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:00 (a.m.) p.m.

Direction North

Weather Sunny, cool 50°

Photographed by: GL Krueger

Sample ID #

Description Front building - Office Space Back - Production Facility

Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:00 (a.m.) p.m.

Direction west

Weather

Photographed by: GL Krueger

Sample ID#

Description Looking west down Broadway from Interplastic Nearest residence ~1/4 to 1/3 mile west of Interplastic

Site Interplastic Corp

EPA # MND 006151336

Date 4/1/91

Time 10:00 (a.m.) p.m.

Direction North

Weather Sunny Cool 50°

Photographed by: GL Krueger

Sample ID #

Description North towards back of facility. RR Tracks on right for tanks cars

Site Interplastic

EPA # MND 006151336

Date 4/1/91

Time 10:00 (a.m.) p.m.

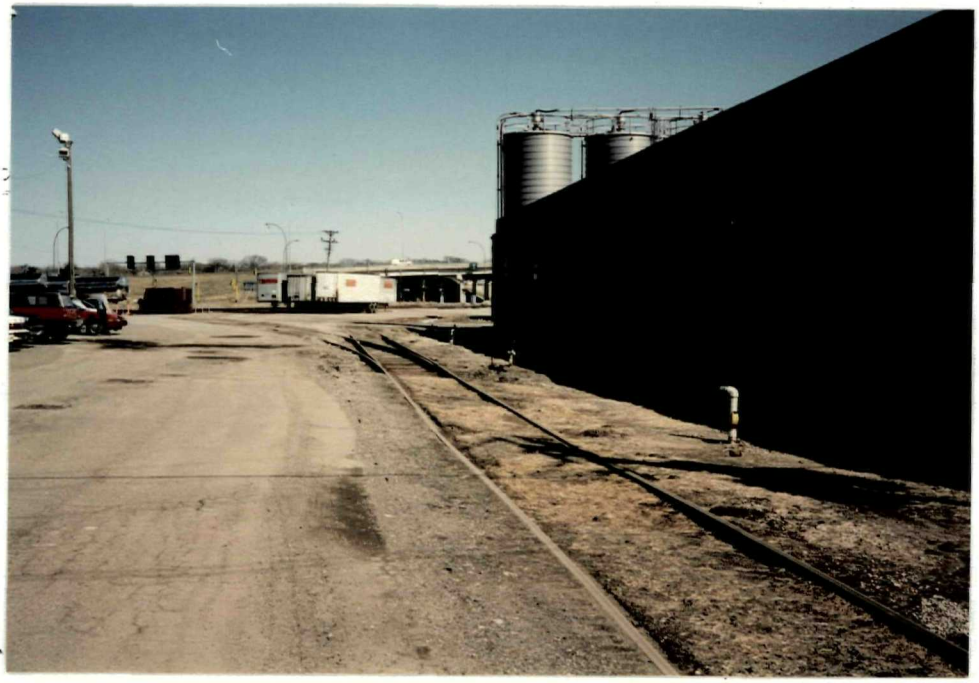
Direction North

Weather

Photographed by: GL Krueger

Sample ID#

Description RR Tracks used by Tank cars for unloading chemicals Reported spills have occured in this area Back portion in picture area of alleged drum burial.



Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:15 (a.m.) p.m.

Direction North West

Weather Sunny Cool 50°

Photographed by: GL Krueger

Sample ID # _____

Description Storage Tanks

Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:15 (a.m.) p.m.

Direction west

Weather _____

Photographed by: GL Krueger

Sample ID# _____

Description Production area and Storage Tanks

Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:15 (a.m.) p.m.

Direction South

Weather Sunny Cool 50°

Photographed by: GLKrueger

Sample ID #

Description View through Back gates into Production Area

Site Interplastic Corp

EPA # MND006151336

Date 4/1/91

Time 10:30 (a.m.) p.m.

Direction South east

Weather

Photographed by: GLKrueger

Sample ID#

Description

INTERPLASTIC CORPORATION
HYDROGEOLOGIC STUDY/STATUS REPORT

Prepared by

George L. Bain, P.G.
Roger F. Hatcher, Ph.D.
Hatcher Incorporated
Job No. 0018-001

March 28, 1986

INTERPLASTIC CORPORATION
HYDROGEOLOGIC STUDY/STATUS REPORT

INTRODUCTION

Hatcher Incorporated conducted a site investigation at Interplastic Corporation on February 3, 4, 5, and 6, 1986. During this investigation, the following activities occurred:

- Monday, February 3, 1986

  1. George Bain arrived in mid-afternoon to conduct a preliminary geologic/hydrologic investigation at Interplastic Corporation's plant site at 2015 N.E. Broadway, Minneapolis, Minnesota. The primary activity during the afternoon was establishing appointments for the following 3 days.

- Tuesday, February 4, 1986

  1. Mr. Bain met with Glenn Kiecker, Minneapolis Department of Health, to obtain information from his files on sites adjacent to Interplastic site. He obtained a report on Hopkins Agricultural Chemical Company site located directly across the street at 2020(?) N.E. Broadway and verbal descriptions of the Hinkle site (General Mills) and Twin City Munitions contamination problem.

  2. Mr. Bain met with Mike Shoneburg of the Water Resources Division of the U.S. Geological Survey in St. Paul and obtained results of his groundwater modeling of glacial drift deposits in the Interplastic site area. He obtained specific geologic references and reports on hydrologic aspects of tunneling in Minneapolis/St. Paul, which has information specific to the site.

  3. Mr. Bain met with Richard Victor of Minneapolis Community Development for copies of reports and well logs on the Broadway/W-35 Redevelopment Area.

- Wednesday, February 5, 1986

  1. Mr. Bain met Mike Westerheim and Ted Christenson of Twin City Testing at the Interplastic site

to conduct hydrologic tests of 3 existing monitoring wells.

2. Mr. Bain, with the assistance of the Twin City Testing personnel, conducted withdrawal tests on each of 3 wells. A submersible, small diameter impeller pump was used to collect the water samples. At a flow rate varying between 1.3 and 1.4 gallons ppm, each well was pumped for approximately 3½ hours. One hundred sixty-five gallons of water was removed from each well. Water level measurements were made prior to initiation of pumping and throughout the pumping period. Also, water samples were collected approximately every 20 to 35 minutes during the pumping and analyzed for specific conductivity and chemical oxygen demand as indicator parameters of groundwater quality. At the termination of the pumping at each location, a terminal sample was collected for organic and inorganic analyses. The inorganic analyses included sulfate, sulfide, nitrate plus nitrite, chlorides, total and dissolved iron, lead, cadmium, and chromium. The organic analyses included a GC/MS scan for volatile organic compounds, a GC/MS scan for pesticides, and GC/MS scan for base neutral compounds.

- Thursday, February 6, 1986

1. Mr. Bain met with Bruce Bloomgren of Minnesota Geological Survey to obtain geologic information an old rock quarry just north of site and for logs of water wells at Superior Dairy and Land of Lakes Creamery.

2. Mr. Bain met with Bob McNaughton of Nabisco at Broadway and Stinson to obtain logs of boreholes at their loading dock.

3. Mr. Bain met with Bruce Davis and Jan Falteisek of Minnesota Pollution Control Agency (MPCA) to obtain further information on the nearby Hopkins Chemical Co. and Hinkle site. He obtained titles of reports on other local pollution abatement projects which MPCA will copy on request.

All of the information obtained from the above sources were searched for borehole log, water level, production well, geologic and water analysis data. Working maps were developed for the area and the appropriate well and geohydrological information was plotted on these maps.

Final copies of these maps will be incorporated into a more extensive report at a later date. The purpose of this report is to present a summary of our findings to date, including the water quality data for the February sampling and to present recommendations for the next set study activities.

PRELIMINARY FINDINGS

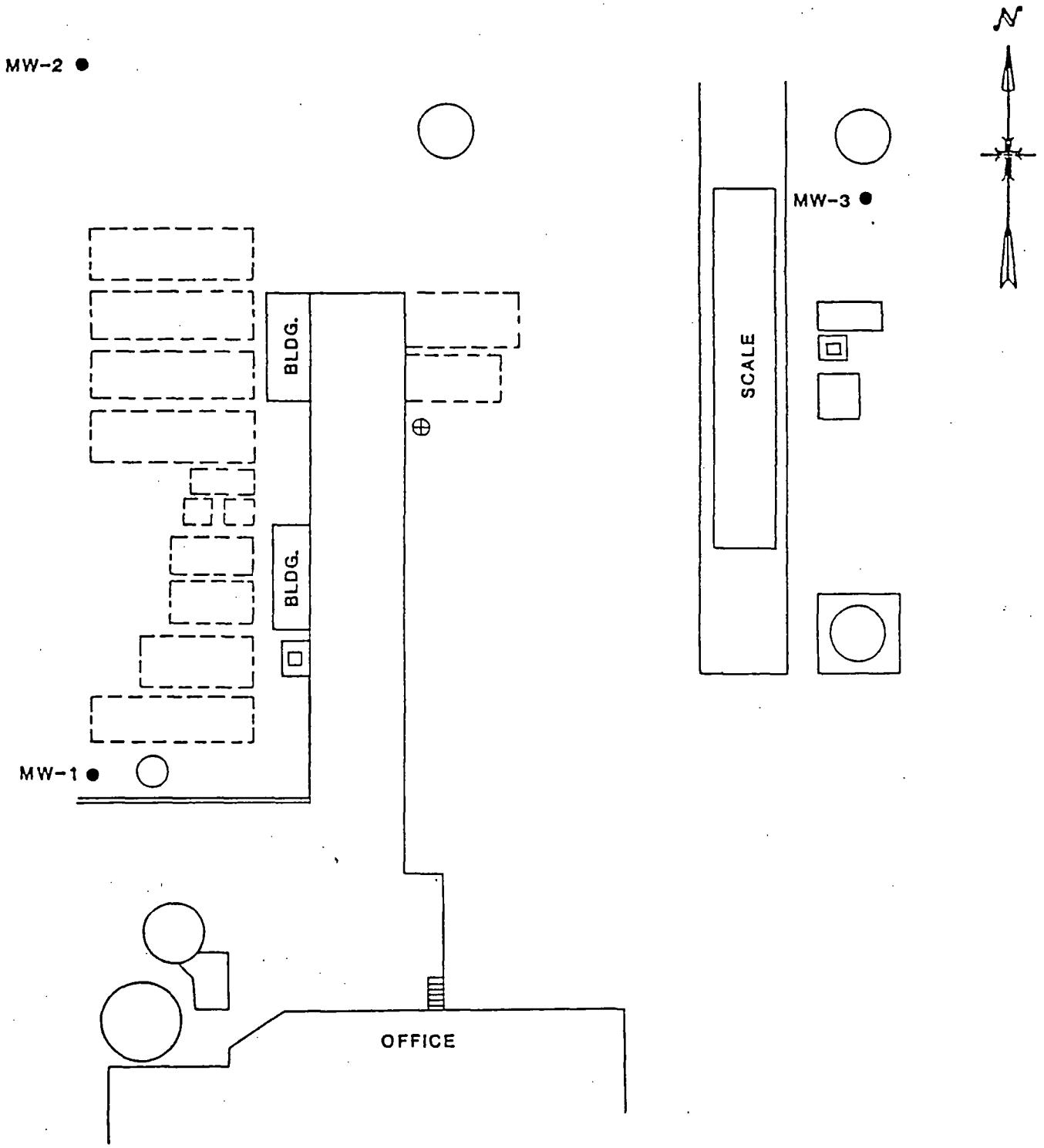
Geology

The site and nearby area is the location of an ancient swamp or bog. The site is underlain by shallow peaty deposits which are in turn underlain by sands, silts and gravels having a permeability of at least 1 x 10^{-4} cm/sec. These formations are nearly horizontal and are underlain by bedrock. Bedrock (the Plattsville Formation) is at about a 50-foot depth, locally. Decorah Shale is possibly present as shallow as 25 feet. A local geologic knoll or boulders of Decorah Shale overly the Plattsville under the Hopkins Agricultural Chemical Company site, across Broadway from Interplastic Corporation. Also, a large area of Plattsville has been removed by an old quarry northwest of the site toward Route 35-W.

Preliminary Water Table Information

Figure 1 shows the locations of site monitoring wells at the Interplastic Corporation site. Figure 2 shows the water level elevations at the site on February 5, 1986, before any testing began. Figure 3 shows water level elevations later in the day. The range of unpumped water level elevations for several different days for these wells is shown in Table 1.

Inspection of site groundwater levels taken on December 11, 1985; those taken on February 5, 1986, (see Figures 2 and 3 plus Table 1); and reported groundwater flow directions at the Hopkins Agricultural Chemical Company site across Broadway (personal commuication, Minnesota DNR), indicate local variability in flow direction caused by local pumpage or recharge of unknown origin. Background data (not presented) indicates that long-term site area drainage is to the old quarry.



LEGEND

● MONITORING WELL

⊕ PROPOSED 4in. MONITORING WELL

1" = 20'

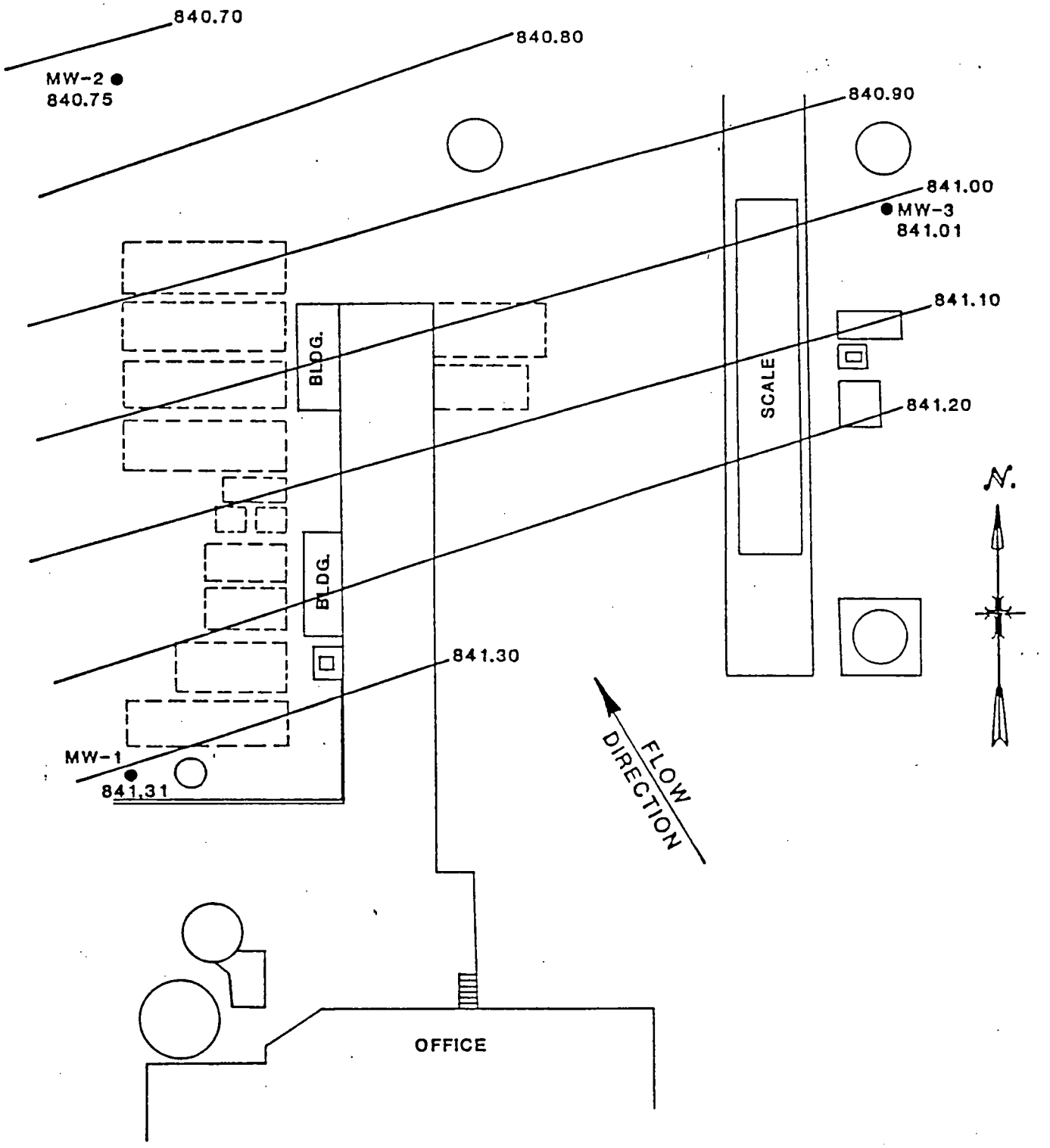
FIGURE 1

LOCATIONS OF SITE

MONITORING WELLS

INTERPLASTIC CORPORATION

MINNEAPOLIS, MINNESOTA

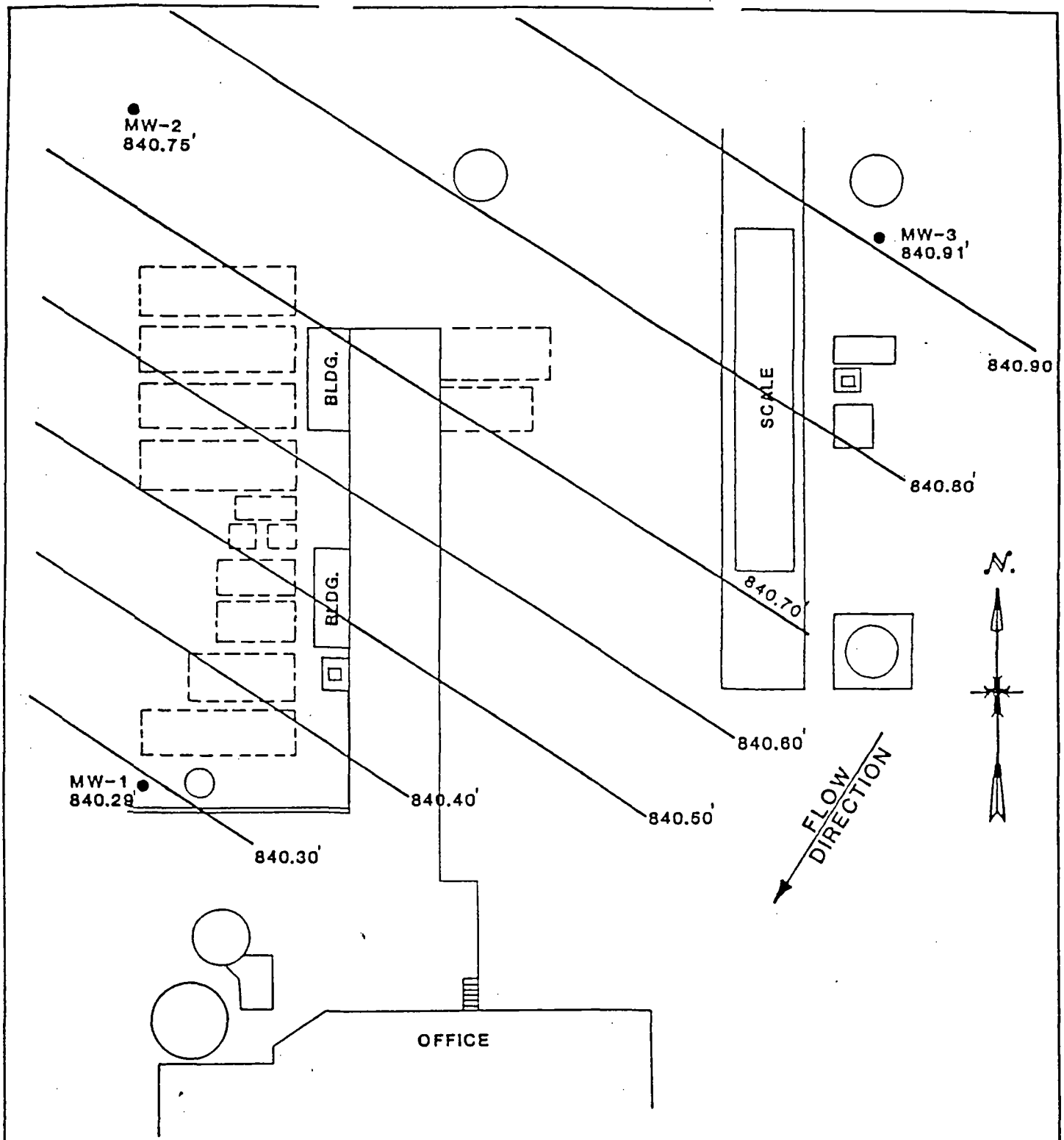


LEGEND

● MONITORING WELL

/ WATER LEVEL CONTOUR (MSL)
1" = 20'

FIGURE 2
WATER LEVEL MAP
2/5/86 8:46 - 9:03 AM CST
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA



LEGEND

● MONITORING WELL

WATER LEVEL CONTOUR (MSL)
1"=20'

FIGURE 3
WATER LEVEL MAP
2/5/86 1:30 - 4:20 PM CST
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA

TABLE 1

SUMMARY OF SITE WATER LEVEL MEASUREMENTS
OF THREE MONITORING WELLS AT
INTERPLASTIC CORPORATION, MINNEAPOLIS, MINNESOTA

Date	MW-1	MW-2	MW-3
12/6/85[a]		844.34 - 844.74	
12/9/85[a]	842.67 - 842.37		
12/10/85[a]			844.44 - 844.14
12/11/85[a]	840.78	841.21	841.44
2/5/86	840.29 - 841.31	840.75	840.91 - 841.09
Measuring Point Elevation (Top of Casing)	859.37	859.04	861.44

(a) Data provided by Twin Cities Testing Corporation

Groundwater Chemistry

The results of the chemical analyses of the groundwater samples collected on February 5, 1986, are presented in Tables 2, 3, and 4. Table 2 presents the results of the COD and specific conductivity analyses utilized as indicators during the progress of the pump test. Table 3 presents the inorganic compounds analyzed on the terminal sample from each monitoring well. Table 4 presents the organic analyses of the terminal sample of each monitoring well. Additionally, at the request of Glenn Kiecker, the monitoring wells were sampled after allowing a recovery time. Specifically, Glenn requested that we sample 72 hours after the pump test. However, since this time would have fallen on a Saturday evening, the sampling was accomplished on the following Monday morning, approximately 110 hours after the last terminal sample had been collected. The results of this sampling are presented in Table 5.

Taken as a group, the chemical analyses indicate that the groundwater underlying the Interplastic site is contaminated with 2 of the compounds stored in the Interplastic Corporation tank farm. Specifically, acetone and styrene. Furthermore, the presence of ethylbenzene is probably related to the styrene since it is sometimes a minor contaminant of styrene. In general, the levels of concentrations for these compounds are significantly lower than those data presented in an earlier report submitted by Twin City Testing on the same site. This difference may be attributable to the large amount of purging which was done prior to the February sampling. In addition to the compounds discussed above, methylene chloride may be present in the water underlying the site. It was evident in the terminal samples from the pump test, although it did not reappear at the sampling 4 days later. It should be noted that the method blank conducted in the laboratory on the day of the analyses showed significant amounts of methylene chloride. The other compound noted was total xylenes, which appeared on the February 10, 1986, sampling. It was only present in Monitoring Well No. 2. The inorganics data indicate high chloride concentrations and elevated levels of iron in the terminal samples. Also, sulfates and sulfides are present, which may account for the slight rotten egg odor that the water possesses. Perhaps this is related to the peat layer which was reported by Twin City Testing. During the pumping test, as shown on Table 2, relatively high values for COD and conductivity were measured. In particular, for Monitoring Well No. 2. While these values are elevated, the specific conductance is not likely to be associated with a spill or leakage at Interplastic Corporation since the organic compounds utilized at the site should not impart specific conductivity to the water. The COD's, while high, do not indicate the presence of a large spill of organic chemicals.

TABLE 2

GROUNDWATER QUALITY INDICATOR RESULTS
ON PUMP TESTS AT INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA ON
FEBRUARY 5, 1986

	Chemical Oxygen Demand, mg/l	Specific Conductance, µmhos/cm
Well 2		
9:05 am (prepumping)	605	10,000
9:21 am	650	8,560
10:23 am	605	8,560
11:00 am	600	7,000
11:35 am	225	6,810
Well 3		
1:30 pm (prepumping)	105	1,560
2:09 pm	140	1,710
2:37 pm	25	1,790
3:20 pm	45	1,830
3:53 pm	50	1,870
Well 1		
3:47 pm (prepumping)	55	2,060
4:40 pm	40	2,100
5:00 pm	105	1,910
5:55 pm	30	2,100
6:38 pm	105	2,060
Lower Detectable Limit	10	2
Test Date	2/6/86	2/6/86
Test Method	EPA 410.4	EPA 120.1

TABLE 3

INORGANIC DATA ON TERMINAL SAMPLES FROM
PUMP TESTS ON 3 MONITORING WELLS AT
INTERPLASTIC CORPORATION, MINNEAPOLIS, MINNESOTA, ON FEBRUARY 5, 1986
ALL VALUES IN Mg/l

	MW-1	MW-2	MW-3	LOWER DETECTION LIMIT	TEST METHOD
Sulfate	29	6	119	1	EPA 375.4
Sulfide	0.05	1.9	0.06	0.03	CE-81-1 p3-243
Nitrate + Nitrite	<0.05	0.95	<0.05	0.05	EPA 353.3
Chloride	197	194	164	0.8	Ion Selective Electrode
Dissolved Iron	7.61	88.4	18.1	0.05	EPA 236.1
Dissolved Lead	0.017	0.017	0.018	0.003	EPA 239.2
Dissolved Cadmium	<0.0001	<0.0001	<0.0001	0.0001	EPA 213.2
Dissolved Chromium	0.01	0.05	0.02	0.01	EPA 281.1
Dissolved Zinc	0.01	0.04	0.02	0.01	EPA 289.1
Total Iron	7.95	90.2	18.1	0.05	EPA 236.1
Total Lead	0.059	0.076	0.050	0.003	EPA 239.2
Total Cadmium	0.0026	0.0028	0.0022	0.0001	EPA 213.2
Total Chromium	0.02	0.05	0.02	0.02	EPA 218.1
Total Zinc	0.02	0.04	0.02	0.01	EPA 289.1

TABLE 4

ORGANIC COMPOUNDS IDENTIFIED BY GC/MS ANALYSIS OF THE TERMINAL SAMPLES OF PUMP TESTS CONDUCTED ON THREE MONITORING WELLS AT INTERPLASTIC CORPORATION, MINNEAPOLIS, MINNESOTA, ON FEBRUARY 5, 1986
ALL VALUES IN mg/l

	MW-1	MW-2	MW-3
Volatiles[a]			
Methylene Chloride	<1.25	2.75[d]	2.15[d]
Acetone	<1.25	7.55[d]	1.13[d]
Ethylbenzene	6.40	2.90	47.0
Styrene	56.0	<1.25	20.0
Acid, Base Neutral[b]	none detected	none detected	none detected
Pesticides[c]	none detected	none detected	none detected

(a) List of volatile compounds analyzed for is in Appendix A

(b) List of acid/base neutral compounds analyzed for is in Appendix A

(c) List of pesticides analyzed for is in Appendix A

(d) The laboratory method blank had high concentration of methylene chloride and acetone. The validity of these values is questionable.

TABLE 5

VOLATILE ORGANIC CHEMICALS IDENTIFIED BY GC/MS ANALYSIS OF THREE MONITORING WELL SAMPLES COLLECTED 110 HOURS (8:00 a.m., February 10, 1986) AFTER TERMINATION OF PUMP TESTS (6:00 p.m., February 5, 1986) AT INTERPLASTIC CORPORATION, MINNEAPOLIS, MINNESOTA
ALL VALUES IN mg/l

Parameter[a]	MW-1	MW-2	MW-3
Acetone	<1.0	16.6	<2.0
Ethylbenzene	5.9	5.3	67.0
Styrene	24.0	<0.5	14.0
Total Xylenes	<1.0	0.55	<2.0

(a) List of volatile compounds analyzed for is in Appendix A.

TENTATIVE CONCLUSIONS

The data gathered and analyzed to date point to the following tentative conclusions concerning the Interplastic Corporation site:

1. Local and site variability in groundwater flow directions indicate that an unidentified hydraulic stress is being placed on the local shallow aquifer.

2. The 3 installed monitoring wells do not sample below approximately 26 feet, leaving about 20 to 25 feet of possible sediment above bedrock unsampled.

3. The monitoring wells are 2-inch ID and are not practical as pump test wells. The water table is too deep to efficiently pump groundwater with a centifical pump in the volume necessary to detect a drawdown at nearby wells. Also, the sediments are too permeable to conduct an accurate falling head test.

4. Because of the high permeabilities of site geologic materials, the drawdown cone of influence from any groundwater withdrawal scheme will probably spread quickly over a large area. Insufficient data are available to predict pumping rates and drawdown so that contaminants from adjacent sites will not be drawn into the Interplastic Corporation site.

5. The chemical analyses of water from on-site wells do not necessarily point to any major tank leaks. They do indicate that some chemical stored at the Interplastic Corporation plant are in the groundwater beneath the site. No pesticides and herbicides or any (with the possible exception of methylene chloride) chlorinated compounds were identified by the GC/MS analyses.

RECOMMENDATIONS

Hatcher Incorporated, based upon the available information, recommends the following actions be taken by Interplastic Corporation:

1. One additional 4-inch stainless steel screen well should be installed just south of tank 12, as shown on Figure 1. This well should be screened from ± 25 feet to the top of bedrock.

2. Once the new well is installed and developed, samples should be taken for GC/MS analyses for volatile organics, acid base neutral extractables, and pesticides/PCB's.

3. A long-term (± 8 to 12 hour) pump test should be conducted to determine accurate aquifer parameters.

4. A continuous water level recorder (e.g., Hermit pressure transistor and data logger or equivalent) should be installed on the new 4-inch well to monitor groundwater fluctuations for a 1 to 2 month period.

5. To comply with the City of Minneapolis requirements, all of the underground tanks must be hydrostatically tested. The city has indicated that the Kent Moore Test is an appropriate procedure.

6. Water treatability tests must be conducted on the groundwater to determine the size and type of treatment device required to remove the volatile organics.

7. Following all of the above procedures, a groundwater report should be prepared describing the results of all of the activities listed above. If additional data is required, they should be specified in the report. If, on the other hand, sufficient data is generated by these activities to predict the behavior of the aquifer under the site, then the pumping requirements necessary to achieve the desired drawdown cone should be specified.

APPENDIX A

Lists of Organic Compounds Analyzed for Interplastic Corporation Preliminary Groundwater Study

VOLATILE ORGANIC COMPOUNDS DATA

EPA METHOD 624

Henretta, Lamm & Cross — Project H2

Sample I.D.: Method Blank — CLE I.D.: V2MB17

Dilution: None

	ug/L Found
Chloromethane	<10
Bromomethane	<10
Vinyl Chloride	<10
Chloroethane	<10
Methylene Chloride	5
Acetone	43
Carbon Disulfide	< 5
1,1-Dichloroethene	< 5
1,1-Dichloroethane	< 5
trans-1,2-Dichloroethene	< 5
Chloroform	< 5
1,2-Dichloroethane	< 5
2-Butanone	18
1,1,1-Trichloroethane	< 5
Carbon Tetrachloride	< 5
Vinyl Acetate	<10
Bromodichloromethane	< 5
1,1,2,2-Tetrachloroethane	< 5
1,2-Dichloropropane	< 5
trans-1,3-Dichloropropene	< 5
Trichloroethene	< 5
Dibromochloromethane	< 5
1,1,2-Trichloroethane	< 5
Benzene	< 5
cis-1,3-Dichloropropene	< 5
2-Chloroethylvinylether	<10
Bromoform	< 5
2-Hexanone	<10
4-Methyl-2-Pentanone	<10
Tetrachloroethene	< 5
Toluene	< 5
Chlorobenzene	< 5
Ethylbenzene	< 5
Styrene	< 5
Total Xylenes	< 5

Prepared by _____

Reviewed by _____

EXTRACTABLE ORGANIC COMPOUNDS

EPA METHOD 625

[redacted]retta, Lamm & Cross

Project H2

Sample I.D.: Method Blank

CLE I.D.: H2-MBE

	ug/L Found		ug/L Found
[redacted]enol	<10	Acenapthene	<10
bis(2-Chloroethyl)ether	<10	2,4-Dinitrophenol	<50
2-Chlorophenol	<10	4-Nitrophenol	<50
1,3-Dichlorobenzene	<10	Dibenzofuran	<10
1,4-Dichlorobenzene	<10	2,4-Dinitrotoluene	<10
Benzyl Alcohol	<10	2,6-Dinitrotoluene	<10
1,2-Dichlorobenzene	<10	Diethylphthalate	<10
2-Methylphenol	<10	4-Chlorophenyl Phenyl Ether	<10
bis(2-Chloroisopropyl)ether	<10	Fluorene	<10
4-Methylphenol	<10	4-Nitroaniline	<50
N-Nitroso-di-n-propylamine	<10	4,6-Dinitro-2-methylphenol	<50
Hexachloroethanene	<10	N-Nitrosodiphenylamine(1)	<10
Nitrobenzene	<10	4-Bromophenyl Phenyl Ether	<10
Isophorone	<10	Hexachlorobenzene	<10
2-Nitrophenol	<10	Pentachlorophenol	<50
2,4-Dimethylphenol	<10	Phenanthrene	<10
Benzoic Acid	<50	Anthracene	<10
bis(2-Chloroethoxy)methane	<10	Di-n-butyl Phthalate	<10
2,4-Dichlorophenol	<10	Fluoranthene	<10
1,2,4-Trichlorobenzene	<10	Pyrene	<10
Napthalene	<10	Butyl Benzyl Phthalate	<10
4-Chloroaniline	<10	3,3'-Dichlorobenzidine	<20
Hexachlorobutadiene	<10	Benzo(a)anthracene	<10
4-Chloro-3-methylphenol	<10	bis(2-Ethylhexyl)Phthalate	<10
2-Methylnaphthalene	<10	Chrysene	<10
Hexachlorocyclopentadiene	<10	Di-n-octyl Phthalate	<10
2,4,6-Trichlorophenol	<10	Benzo(b)fluoranthene	<10
2,4,5-Trichlorophenol	<50	Benzo(k)fluoranthene	<10
2-Chloronaphthalene	<10	Benzo(a)pyrene	<10
2-Nitroaniline	<50	Indeno(1,2,3-cd)pyrene	<10
Dimethyl Phthalate	<10	Dibenz(a,h)anthracene	<10
Acenaphthylene	<10	Benzo(g,h,i)perylene	<10
3-Nitroaniline	<50		

(1)-Cannot be separated from diphenylamine

[redacted]epared by _____

[redacted]eviewed by _____

ORGANOCHLORINE PESTICIDE DATA

EPA METHOD 608

Henretta, Lamm & Cross
Sample I.D.: Method Blank

Project H2
CLE I.D.: H2-MBP

Compound	ug/L(ppb) Found
Aldrin	<0.05
alpha-BHC	<0.05
beta-BHC	<0.05
gamma-BHC	<0.05
delta-BHC	<0.05
Chlordane	< .5
4,4'-DDD	<0.1
4,4'-DDE	<0.1
4,4'-DDT	<0.1
Dieldrin	<0.1
Endosulfan I	<0.05
Endosulfan II	<0.1
Endosulfan Sulfate	<0.1
Endrin	<0.1
Endrin Ketone	<0.1
Heptachlor	<0.05
Heptachlor Epoxide	<0.05
Methoxychlor	<0.5
Toxaphene	<1
PCB-1016	<0.5
PCB-1221	<0.5
PCB-1232	<0.5
PCB-1242	<0.5
PCB-1248	<0.5
PCB-1254	<0.5
PCB-1260	<0.5

Prepared by _____

Approved by _____

EM TERRANE CONDUCTIVITY INVESTIGATION
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA

I. Introduction

The Interplastic Corporation resins plant is located at 2015 N.E. Broadway. Broadway bounds the south side of the plant site. Cleveland Street and a railroad spur form the east boundary. A large triangular-shaped, paved lot for tank wagon and employee parking exists on the north side of the plant facility. The plant is enclosed within a chain link fence. See attached Figures.

An EM Survey was conducted by Hatcher Incorporated on April 16, 1986, to determine the location of a "reported" landfill containing 55 gallon drums buried on the property sometime in the early 1970's.

II. Conductivity Survey

A rectangular grid was laid out on the parking lot to facilitate accurate location of individual measurements and reproduction of those measurements on a conductivity contour map. Thirteen traverse lines 10 feet apart were laid out parallel to the north chain link fence. Each line began at the railroad spur on the east side of the lot and ended in or just across the ditch on the west side of the parking lot. Stations (measurement points) were marked along each line at 0.33 meter (10.9 ft.) intervals. The survey area (approximately 130 x 100 ft.) was designed to more than encompass an area alleged to have been unwooded and open to traffic early in the history of the plant.

A Geonics 34-3XL Terrane Conductivity meter was used in the survey. The Geonics 34-3XL has two separate, portable antennas (coils); one for transmitting and one for receiving. The transmitting antenna produces an alternating

electromagnetic field, which creates corresponding eddy currents in the underlying soil and rock. The resulting change in magnetic field, read at the receiving antenna is proportional to the conductivity of a half-sphere of earth between the two antennas. Conductivity measurement can be made with both antennas held co-planer and vertical and/or both antennas held co-planer and horizontal. The horizontal dipole (vertical co-planer position) is more sensitive to near surface materials; the vertical dipole (horizontal position) is more sensitive to deeper materials.

At the Interplastic parking lot traverses were made with the 10 meter antenna spacing. The survey was begun with the transmitting antenna positioned at Station 1 at the extreme east end of each line and the receiving antenna at Station 4. The measurement(s) made in that configuration were plotted at the mid-point (5 meters) between stations 1 and 4. The next measurement was made by moving 3.33 meters (10.9 feet) along the line to stations 2 and 5. Subsequent measurements were made in this manner until all lines were completed. Horizontal dipole measurements were made along every line. Vertical dipole measurements were made along every third line to obtain information on the conductivity of the deeper subsurface materials. All readings were subsequently plotted on a base map representing the parking lot. See attached Figures 1 and 2 and Table 1.

III. Interpretation

Individual conductivity measurements plotted in Figures 1 and 2 have been contoured at 2 millimhos/meter intervals (and 1 mmho/meter where possible) to facilitate interpretation. Figure 1 is more representative of the conductivity of materials closer to the surface than that of Figure 2, a fact caused by the different response of the antennas when they are held in different co-planer orientations. The horizontal dipole position (at the 10

meter spacing) is more sensitive to materials shallower than about 8 to 10 feet; whereas the vertical dipole is more sensitive at about 13 feet but material at 50 feet still contributes significantly to the reading. Thus, for practical purposes, the horizontal dipole map may be considered a relatively shallow conductivity map and the vertical dipole a comparatively deeper one.

Taken as a whole, Figure 1 is fairly featureless. It has an amplitude range of about 7 millimhos/meter over approximately 80-90% of the area surveyed. However, there is a large anomaly in the southeast corner of the parking lot. The first several readings in line 0, for example, saturate the meter (i.e., are off-scale). Also, this high positive anomaly is partially surrounded to the north by low conductivity readings. The pattern of these low readings is typical of the readings around dike-like conductive masses.

Figure 2, the vertical dipole map, may be considered representative of the conductivity distribution of the deeper materials. Most of this map also shows only a small range of conductivity, approximately 12-25 millimhos per meter. Significantly, the one high anomaly that does exist resides in the southeast corner, also; but it has a lower amplitude. This indicates that, at least in the vertical dimension, the causal conductive mass has its greatest affect on the more shallow sensing antenna -- the horizontal dipole.

There is only one anomaly in the entire area surveyed that is indicative of a buried mass. This is the anomaly located in the southeast corner of the parking lot. The cause of that anomaly could not be determined from the data collected.

In order to better define the cause of the anomaly, the use of further geophysical instruments such as a magnetometer, metal detector survey, or ground penetrating radar was considered but declined. Magnitometer surveys have historically been less definitive than the EM technique

in such situations as exist at this site. The simple metal detector would no doubt confirm the anomaly and give better definition of the edges of the "target" area, but it would also pick up all of the tin cans, scrap, and so forth. Ground penetrating radar usually does not work in an area where the conductivity is much greater than 8 mmhos/meter, as in the case at this site.

It was judged that the most reliable method of determining whether buried drums were the cause of the one anomaly revealed by the EM Survey would be to auger two six-inch test holes into the center of the anomaly. Further testing or excavation would depend upon the information developed from two test holes.

IV. Borings

Two shallow auger probes were made at the hole locations shown on Figure 1. First, the alignment of the fill pipes from the railroad siding on the east side of Cleveland Street to the on-site tanks was determined. Then the two hole locations were placed so that they straddled the steel fill lines, but were still near the center of "high" anomaly. Logs of these two auger probes are attached.

The two holes were deepened by successively augering and split-spoon sampling until obviously native geologic materials were encountered. The first hole was alternately augered and driven through 6.5 feet of fill until fine to medium, light gray-green, native sand was found at the bottom of the hole at 12 feet. The second hole was augered and driven to about 8 feet. Natural soil consisting of black to dark gray humic clay, underlain by fine to medium sand ranging from gray to light green in color, was found at a depth of 6 feet.

The fill consisted of dirt, gravel, and large chunks of concrete (i.e., greater than 1 foot square). No metal debris was found, and no chemical odor was detected from either hole or the samples. Both holes were dry.

No metal mass or other conductive material, other than the known fill pipes, was found beneath the immediate area of these two auger holes. Since these holes were located in the most positive part of the anomaly, it must be concluded that the anomaly is not indicative of buried drums. Instead, this positive anomaly must be caused by a combination of the influence of the buried fill pipes, chain link fence, glycol tank, and the fill pipes to that tank, all of which are located in the vicinity of the anomaly.

V. Conclusion

The EM Survey, and the results of the two test holes drilled into the center of the one anomaly defined by the EM Survey, confirm that there are no buried drums under the surface of the area surveyed.

HATCHER INCORPORAT

Borehole Log Sheet 1 of 1

Client Interplastic Corporation Project/Location Minneapolis, MN

Hole No. A-1 Elevation ± A.M.S.L

By G. Bain Date 4/30/86

Boring Contractor Twin Cities Testing Hole Size 6" Hollow Ste

Depth ft.	Thick. ft.	Elev. ft.*	Lithologic Description	Remarks
0			Blacktop	
2	6.5		Fill, dirt, gravel, lots of junk concrete. No chemical odor.	
4			(Drove SPST 0.3 ft. at 75 blows. Redrilled, drove sampler to 7 ft.)	Sample
6				Sample
8			Sand, fine changing to medium, black at top and changing to light gray and green.	
10			No odor	Sample
12			END OF HOLE	

Water Level Dry Date _____ Time _____

*Above Mean Sea Level

HATCHER INCORPORAT

Borehole Log Sheet 1 of 1

Client Interplastic Corporation Project/Location Minneapolis, MN

Hole No. A-2 Elevation _____ A.M.S.L

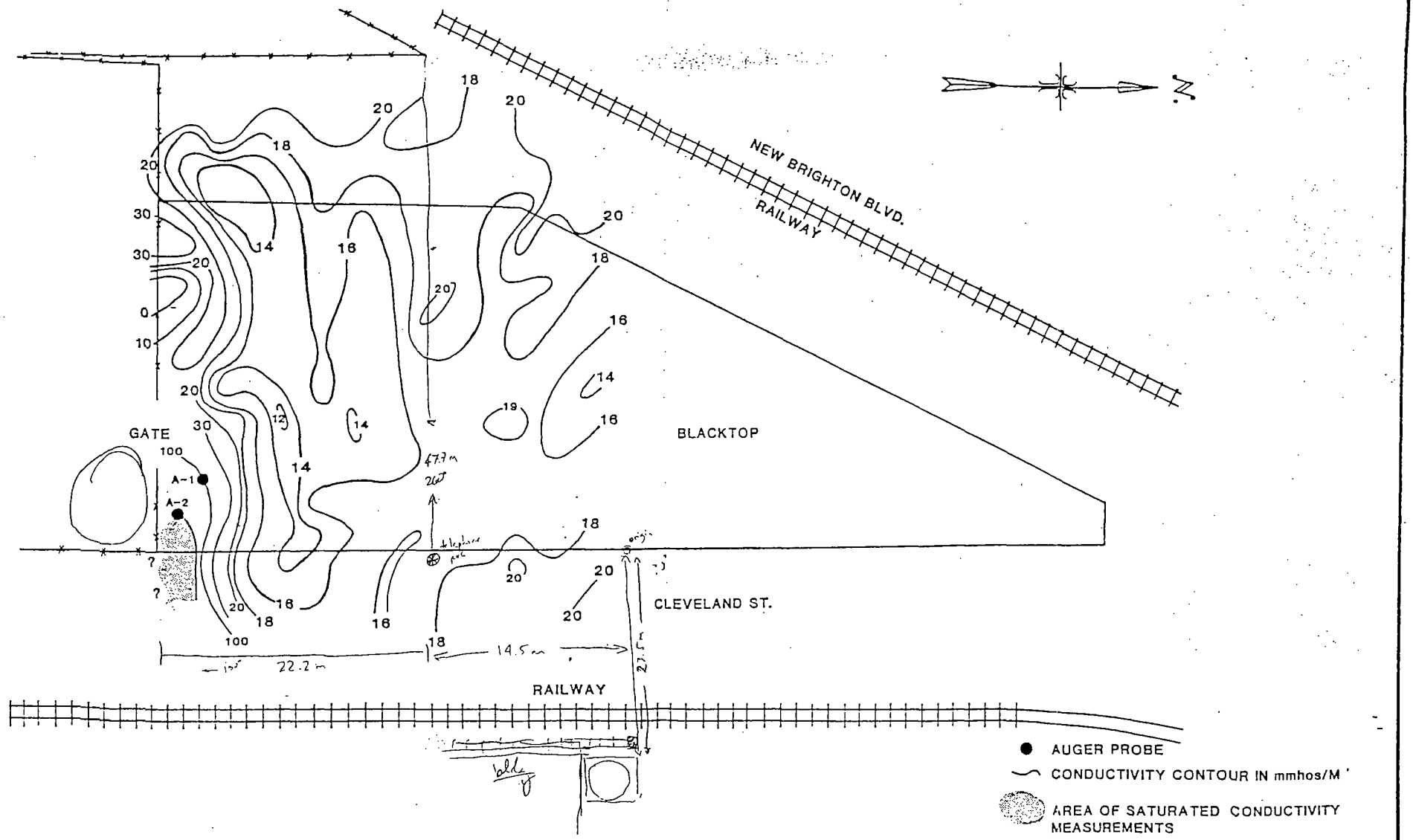
By G. Bain Date 4/30/86

Boring Contractor Twin Cities Testing Hole Size 6" Hollow Ste

Depth ft.	Thick. ft.	Elev. ft.*	Lithologic Description	Remarks
0			Blacktop	
			Soil, gravel, rocks	
2				
4			Broken concrete, rocks, dirt No odor	
				Sample
6			Clay, humic, black over sand, medium, gray to green	Sample No Odor
8			END OF HOLE	
10				

Water Level _____ Date _____ Time _____

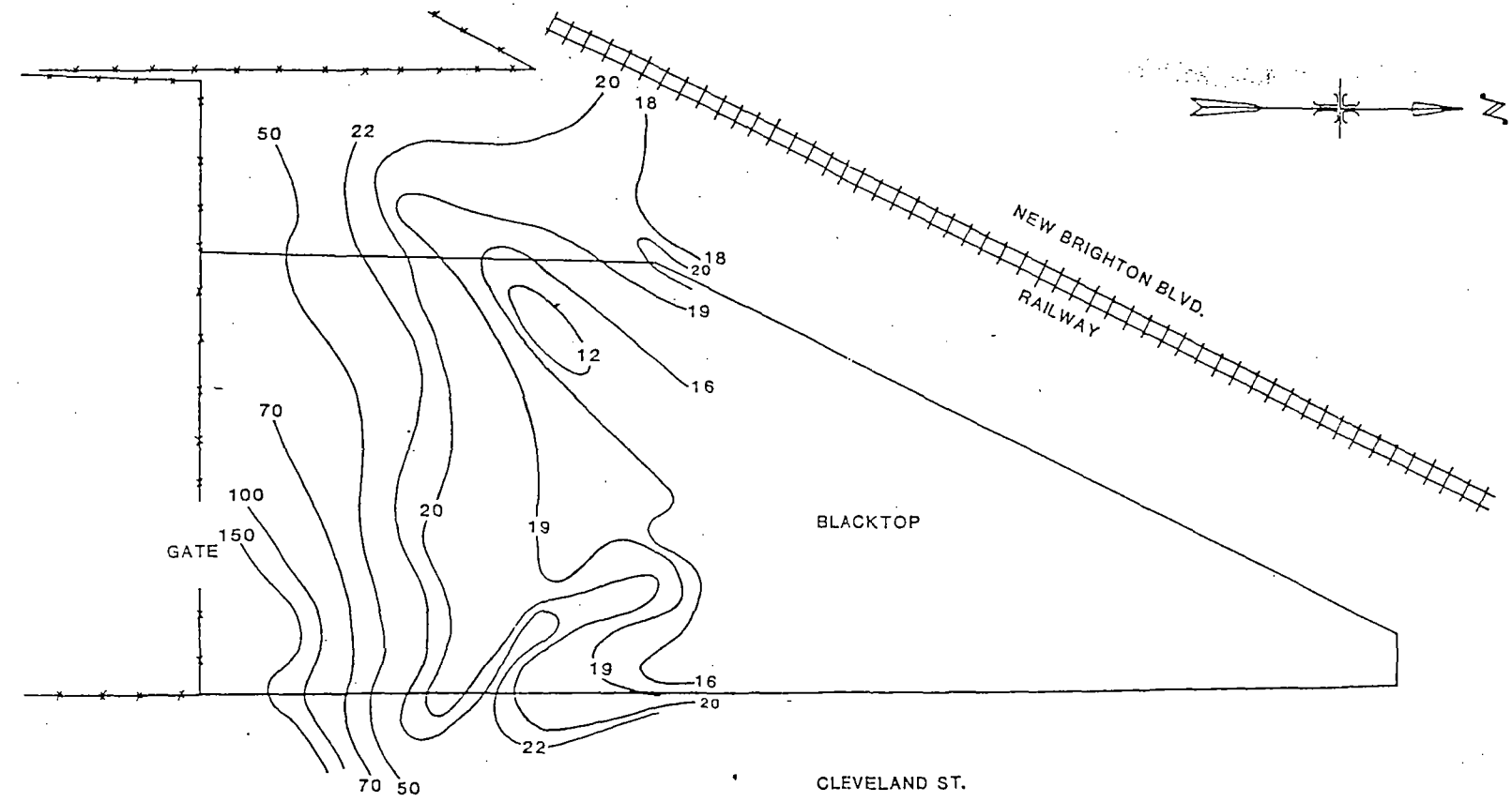
*Above Mean Sea Level



	Job No.: 0018-001	Hatcher Incorporated RICHMOND, VIRGINIA	Date: May 7 1986 Scale: 1" = 30' *	Conductivity Contour Map – Horizontal Dipole Drawing No.: Figure No.: 1

*Note- Reduced from original

5/9/91



	Job No.: 0018-001	Hatcher Incorporated RICHMOND, VIRGINIA	Date: April 24 1986	Conductivity Contour Map – Vertical Dipole
			Scale: 1" = 30' *	Drawing No.: / Figure No.: 2

* Note – reduced

TABLE 1

TERRANE CONDUCTIVITY MEASUREMENTS
NORTH PARKING LOT

Station	Line Number												
	0	1	2	3	4	5	6	7	8	9	10	11	12
	* M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S	M/S
9V	10/30	20/30	16/30	15/30	16.5/30	15/30	15/30	20/30	18.5/30	18/30	19/30	18/30	15/30
9H		60/100			22/30			17/30			15/30		
10V	0/10	20/30	16/30	15/30	17/30	15.5/30	15/30	18.5/30	20/30	18/30	18/30	18/30	18/30
10H		60/100			23/30			14/30			16.5/30		
11V	36/100	10R/300	14/30	15/30	17.5/30	15.5/30	16/30	19/30	19/30	17/30	20/30	19/30	19/30
11H		50/100			20/30			12.5/30			17/30		
12V	20/30	13/30	13/30	15/30	18/30	16/30	17.5/30	19/30	19/30	18/30	17/30	20/30	21/30
12H		50/100			20/30			16/30			24/30		
13V	16/30	11/30	14/30	16/30	19/30	18/30	18/30	18/30	19/30	19/30	19/30	20/30	
13H		53/100			17/30			18/30			17/30		
14V	17/30	28/30	17.5/30	19/30	18.5/30	20/30	18/30	18/30	18/30	19/30	20/30		
14H		50/100						19/30			17/30		
15V	25/30							18/30	17/30	19/30			
15H								20/30					

*NOTE: Measurements are presented in millimhos per meter. "V" equals vertical coplaner position; "H" equals horizontal coplaner position. "M" equals Instrument Measurement. "S" equals Scale Used.

SF-00006-01

STATE OF MINNESOTA

DEPARTMENT Natural Resources

Office Memorandum

TO: George Johnson
Darryl Weakly
MPCA-Hazardous Waste Enforcement

Jim Lundy
Byron Adams
MPCA-Site Response Unit

DATE: 10/23/86

FROM: Jay Frischman
Technical Analysis Unit
MDNR-Waters

PHONE: 296-0517

SUBJECT: GEOPHYSICAL SURVEY OF INTERPLASTIC CORPORATION

On September 24, 1986 an electromagnetic induction survey was conducted on the paved parking lot north of the Interplastic Corporation plant facility at 2015 N.E. Broadway. The survey consisted of both inphase and quadrature phase readings using the Geonics EM-31 Electromagnetometer. The survey objective was to determine the location of a reported landfill suspected of containing metal barrels.

Study Area

The study area was part of a triangular shaped, paved lot for tank wagon and employee parking on the north side of the plant facility. The suspected burial area is roughly 60 meters north of the chain link fence gate (See Figure 1). Station 0,0 was located 36.7 meters north of the northeast corner of the chain link fence. An inphase or "metal detection" and quadrature phase survey was run on a triangular grid measuring 30 by 30 by 35 meters, with readings at 2.5 meter intervals.

Inphase

Inphase readings were taken at each station with vertical dipoles using both north-south and east-west orientations. The data was plotted with the Golden Graphics' "Topo 87" and "Surf 87" contouring programs. Figures 2 and 3 are plan views of the data. Figures 4 and 5 are 3-D views for the data in Figures 2 and 3 respectively. These results are very similar, each plot shows a conductivity "peak" in the northeast corner of the survey area (Feature A). The plot also shows a ridge of decreasing conductivity (Feature B) running west-south-west from the "peak". There also are two small conductive highs, one southwest (Feature C) and one south (Feature D) of the "peak".

Quadrature Phase

Quadrature readings were taken at each station with vertical dipoles using both north-south and east-west orientations. The data was plotted with the Golden Graphics' "Topo 87" and "Surf 87" contouring programs. Figures 6 and 7 are plan views of the data. Figures 8 and 9 are 3-D views for the data in Figures 6 and 7 respectively. These plots are similar to the inphase plots in that there is a conductive "peak" (Feature E) and a zone of decreasing conductivity (Feature F) eminating from the "peak".

Interpretation of Results

The main points of interest which can be deduced by examination of Figures 2-9 are: (1) a conductivity "peak" [(Feature A/E) Figure 10] centered at approximately station 2,28. This anomoly correlates nicely with the location of the reported barrels. (2) A linear anomoly (Feature B) which could be a trench containing metal. (3) Several smaller conductive highs (Features C and D) which may be due to buried metal. (4) The conductivity anomoly (Feature F) extends to the south of the inphase anomoly. This could be indicative of a contaminant plume moving away from the suspected drums or simply a larger area of disturbed material.

Recommendations for Further Action

The electromagnetic survey revealed one large anomoly near the suspected location of burial. Therefore, soil borings or a test pit should be centered on Feature A/E (Figure 10). Secondary "metallic" targets are the anomalous areas described as Features B, C and D. Soil borings in the conductive high (Feature F) may indicate the presence of a contaminant plume. Extention of the EM survey lines on all sides of the gridded area may define additional targets.

JF:tjb

FIGURE 1

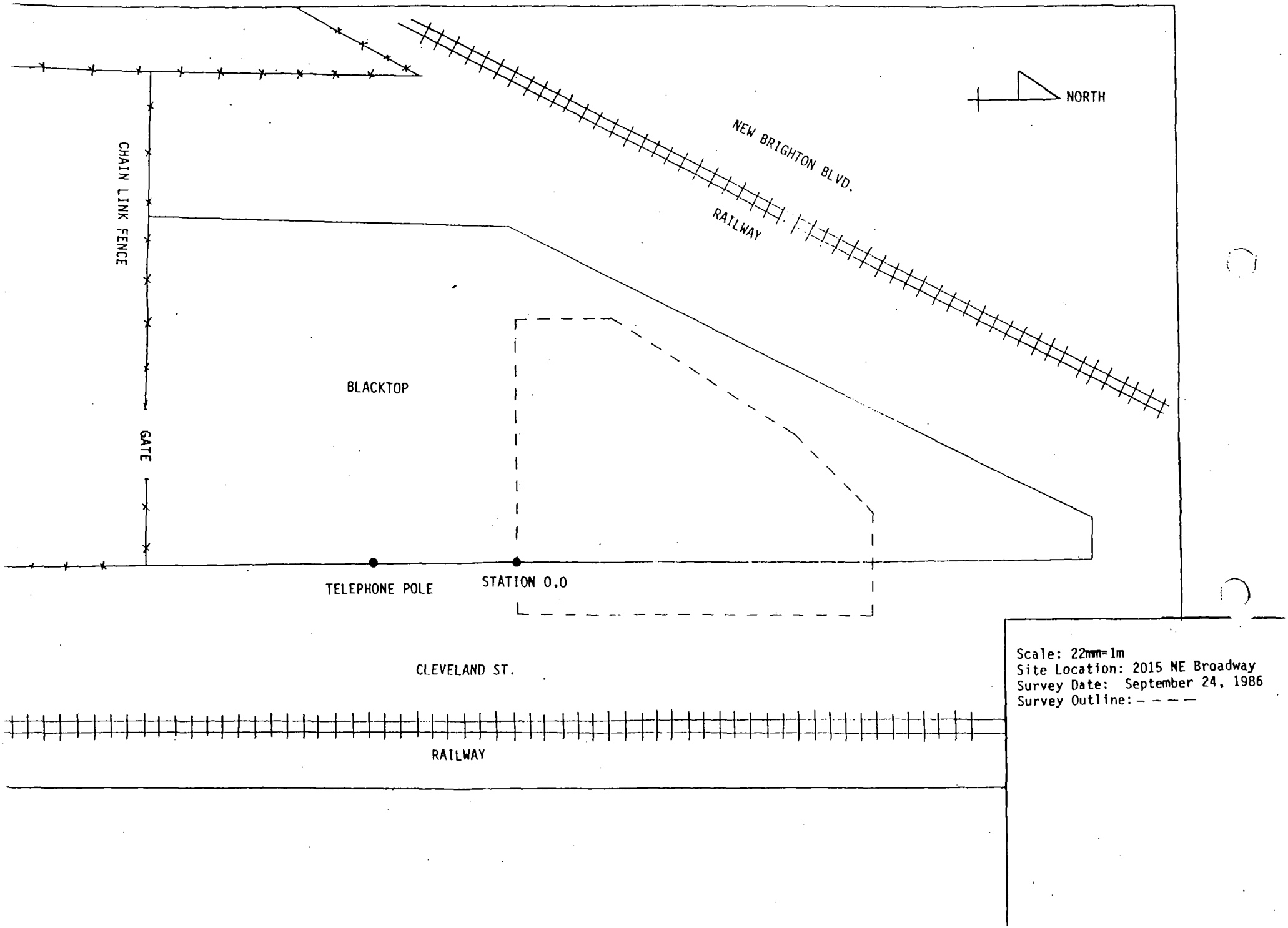
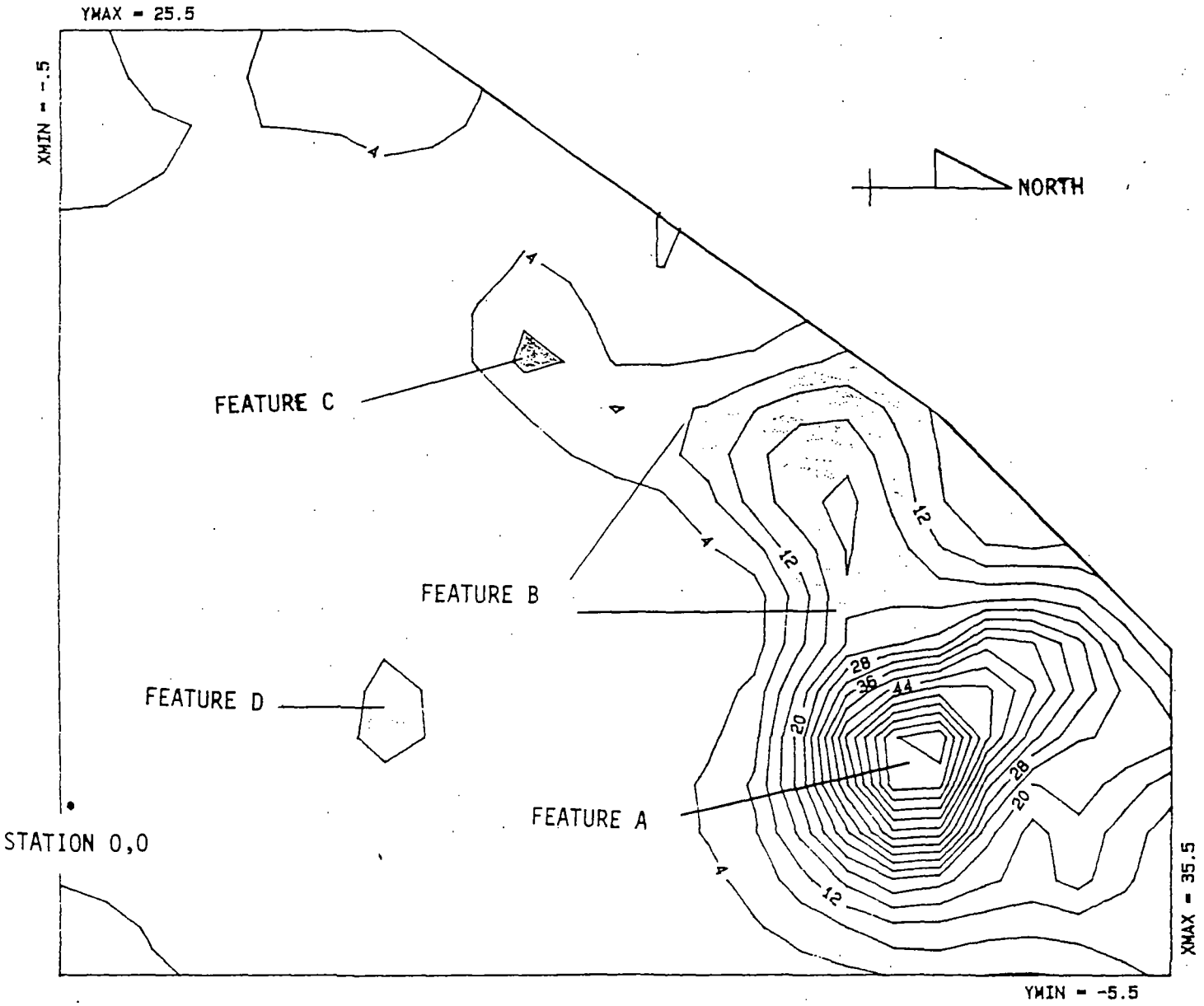

NORTH
NEW BRIGHTON BLVD.
RAILWAY
CHAIN LINK FENCE
GATE
BLACKTOP
TELEPHONE POLE
STATION 0,0
CLEVELAND ST.
RAILWAY
Scale: 22mm=1m
Site Location: 2015 NE Broadway
Survey Date: September 24, 1986
Survey Outline: - - - -

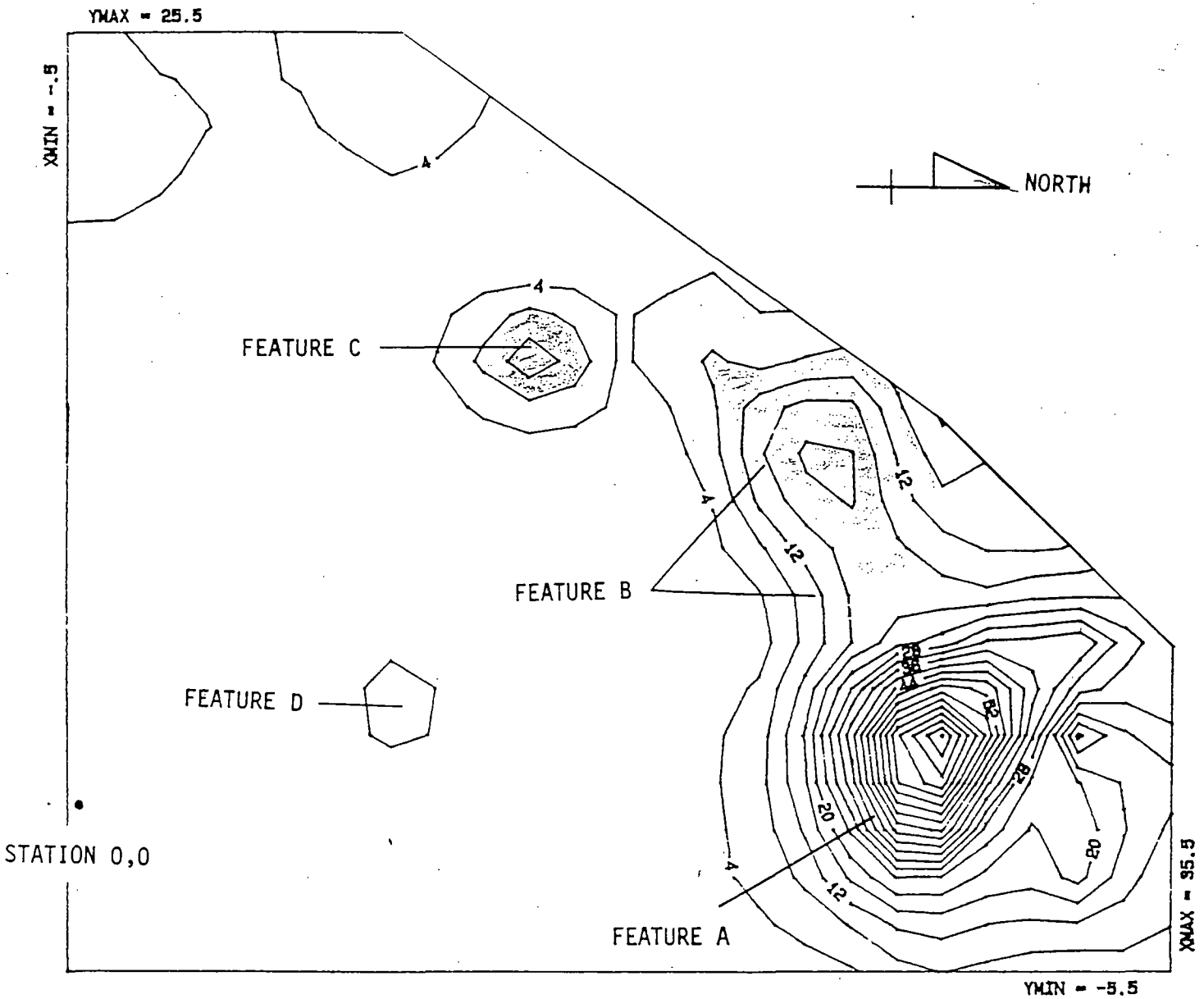
FIGURE 2



INTERPLASTIC NS VERTICAL INPHASE

Scale: 50mm=1m
Conductivity units: mmhos/m
Contour interval: 4 mmhos/m

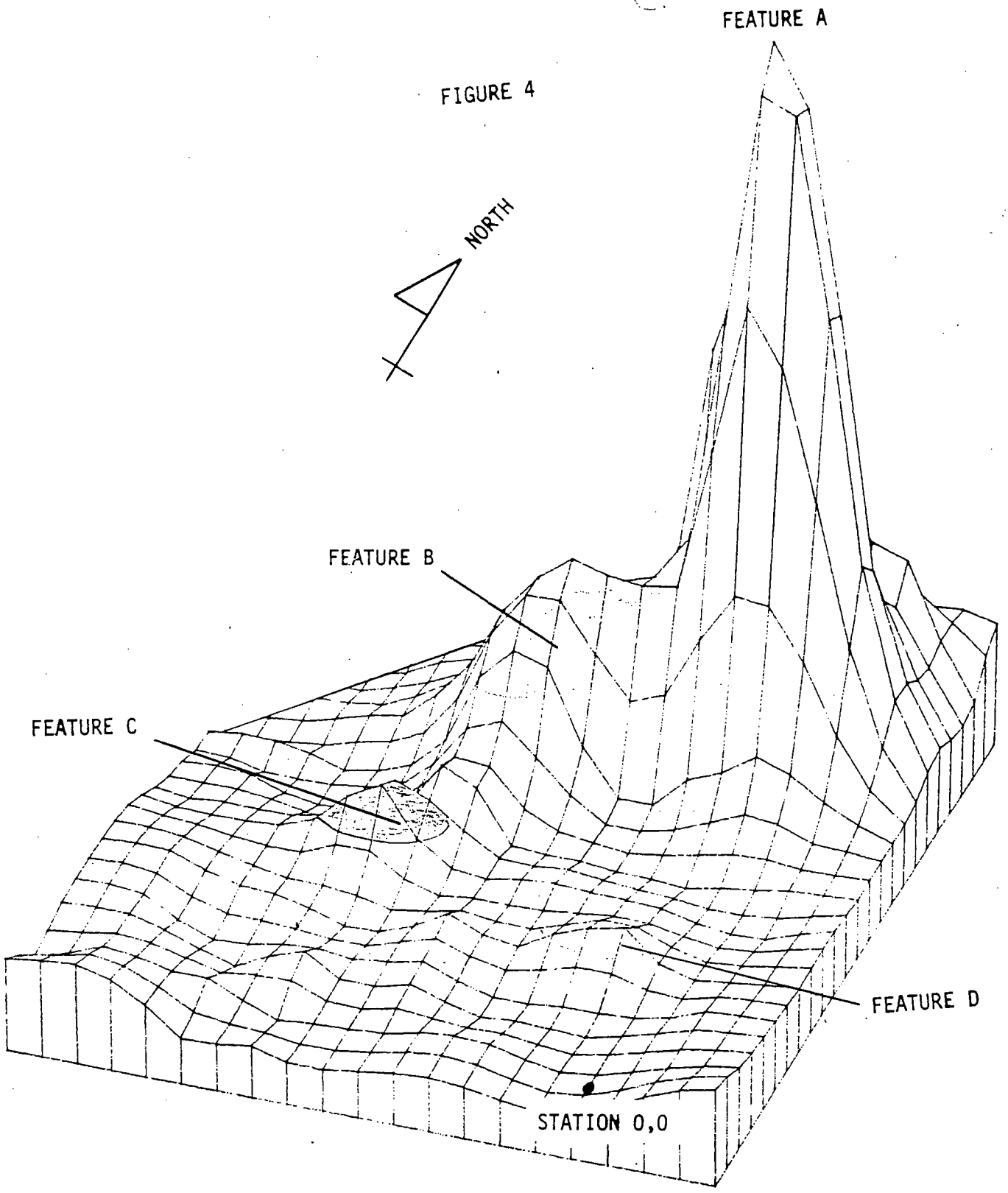
FIGURE 3



INTERPLASTIC EW VERTICAL INPHASE

Scale: 50mm=1m
Conductivity units: mmhos/m
Contour interval: 4 mmhos/m

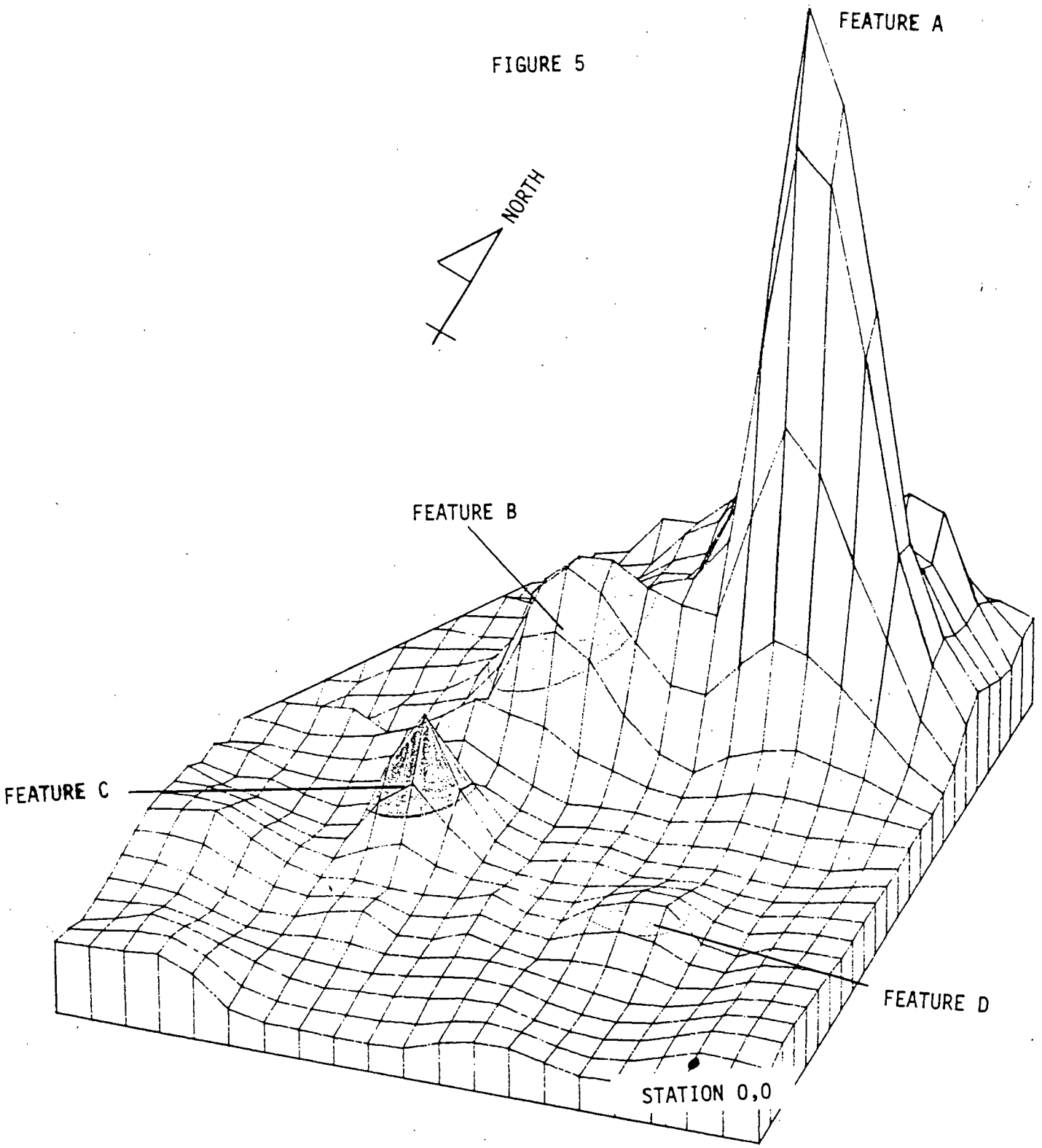
FIGURE 4



INTERPLASTIC NS VERTICAL INPHASE

NOT TO SCALE

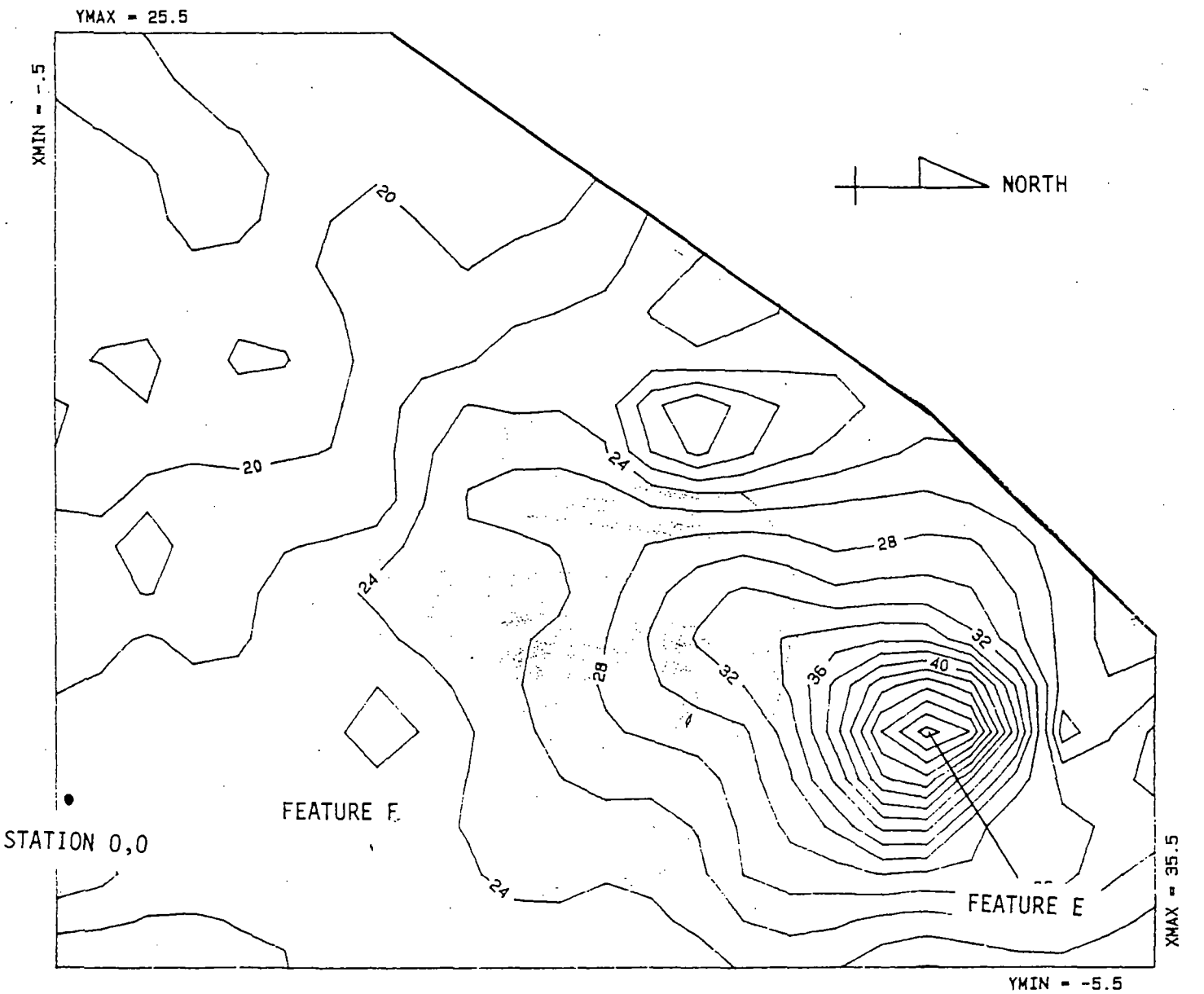
FIGURE 5



INTERPLASTIC EW VERTICAL INPHASE

NOT TO SCALE

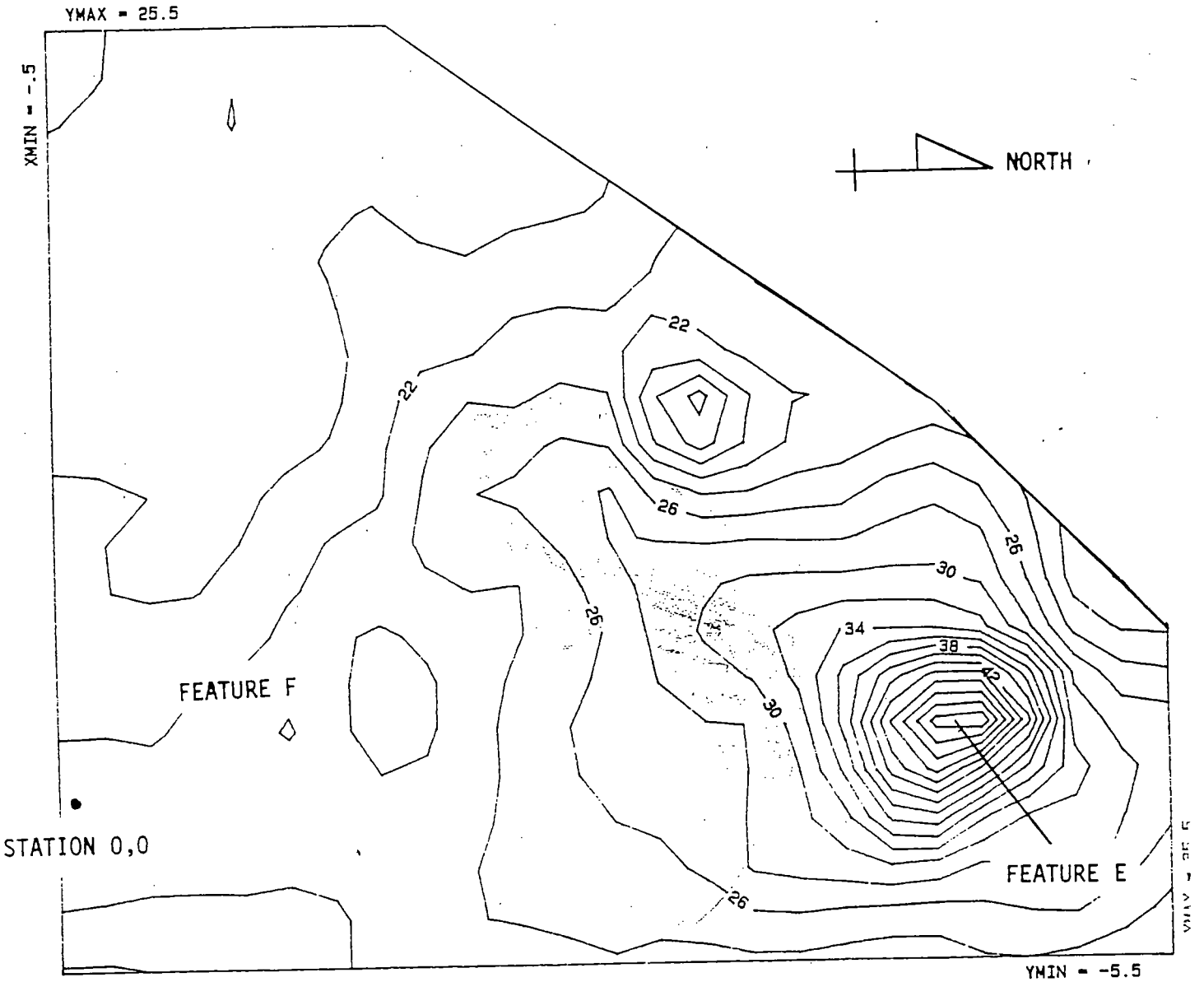
FIGURE 6



INTERPLASTIC NS VERTICAL QUAD

Scale: 50mm=1m
Conductivity units: mmhos/m
Contour interval: 2 mmhos/m

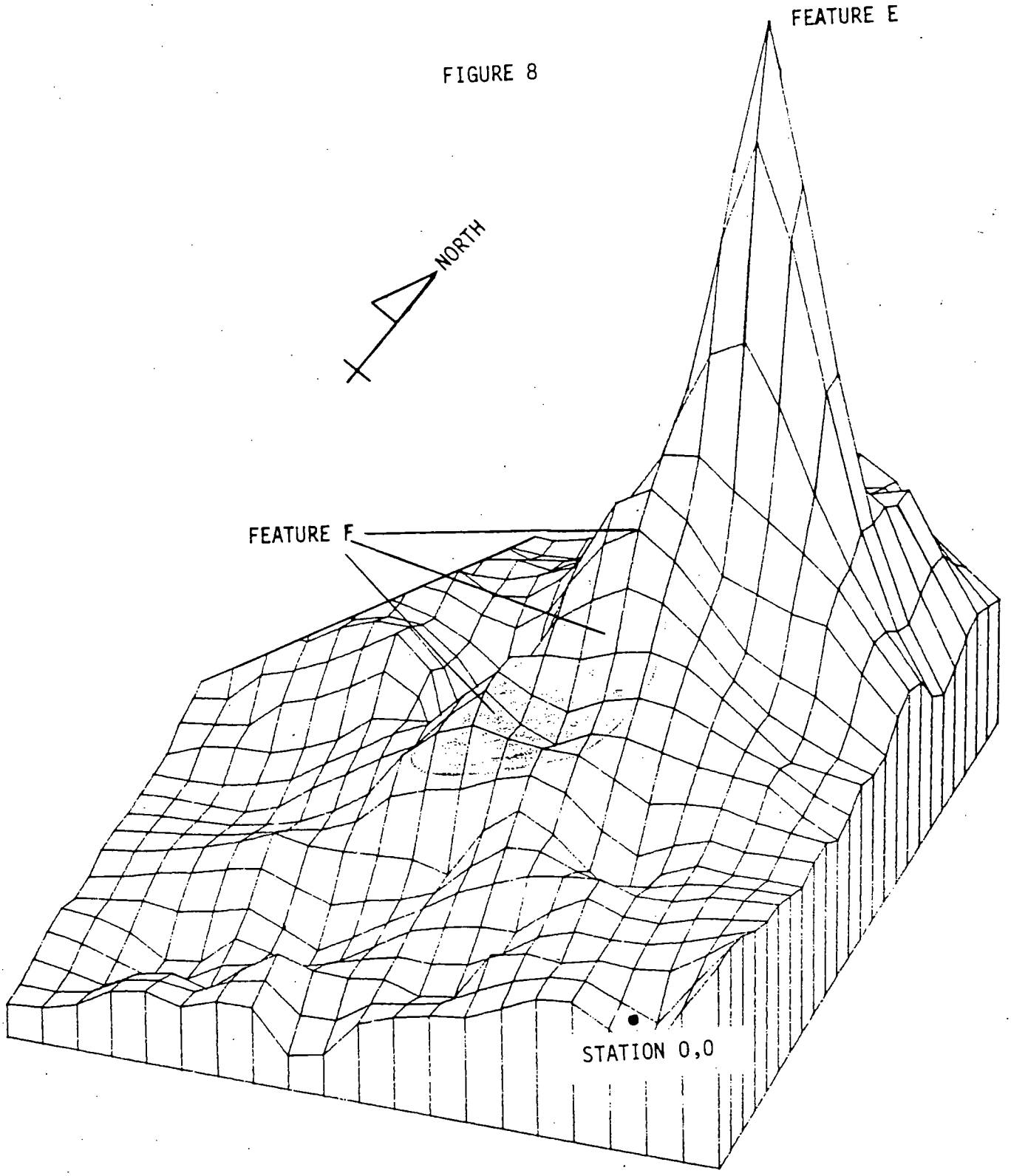
FIGURE 7



INTERPLASTIC EW VERTICAL QUAD

Scale: 50mm=1m
Conductivity units: mmhos/m
Contour interval: 2 mmhos/m

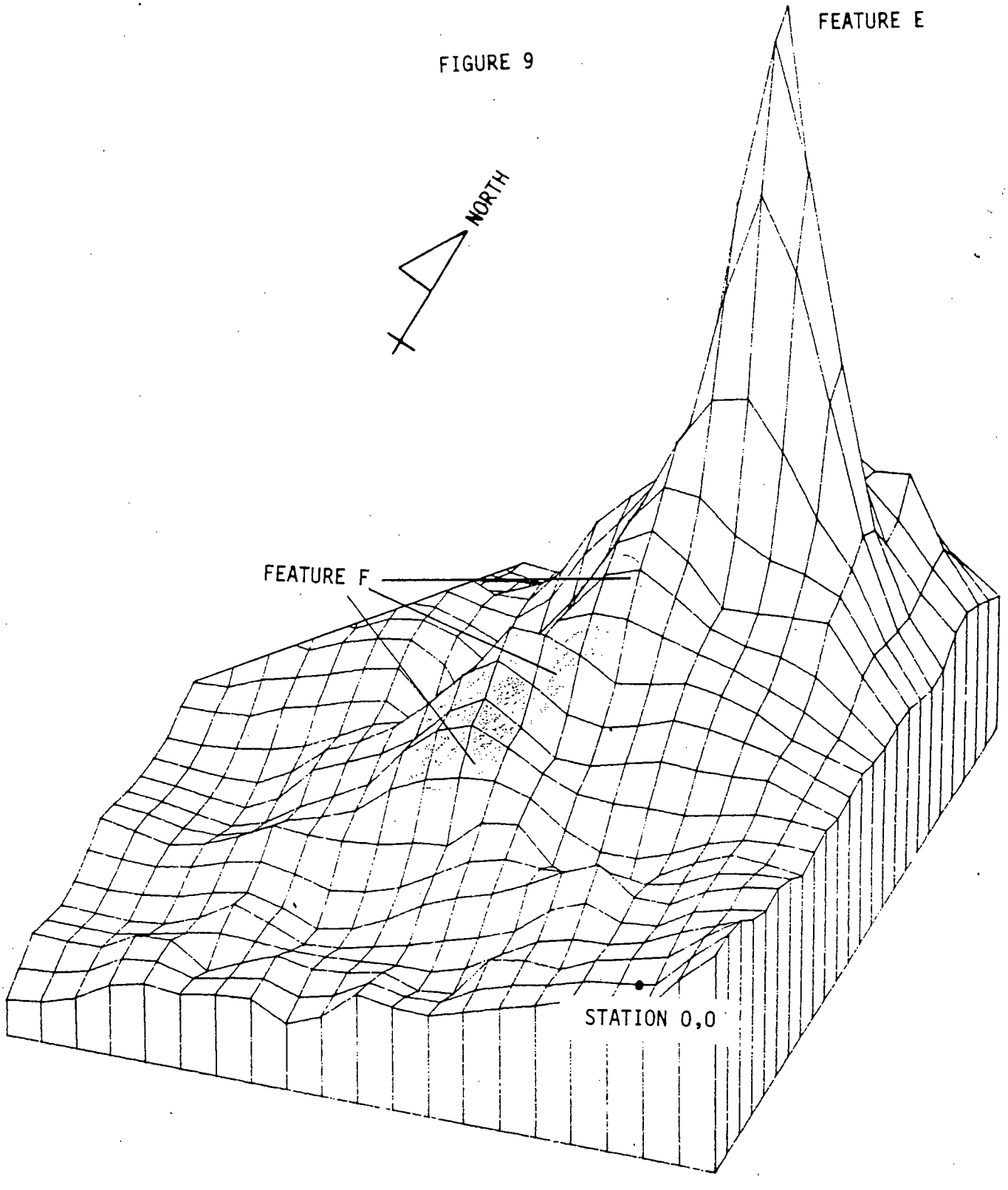
FIGURE 8



INTERPLASTIC NS VERTICAL QUAD

NOT TO SCALE

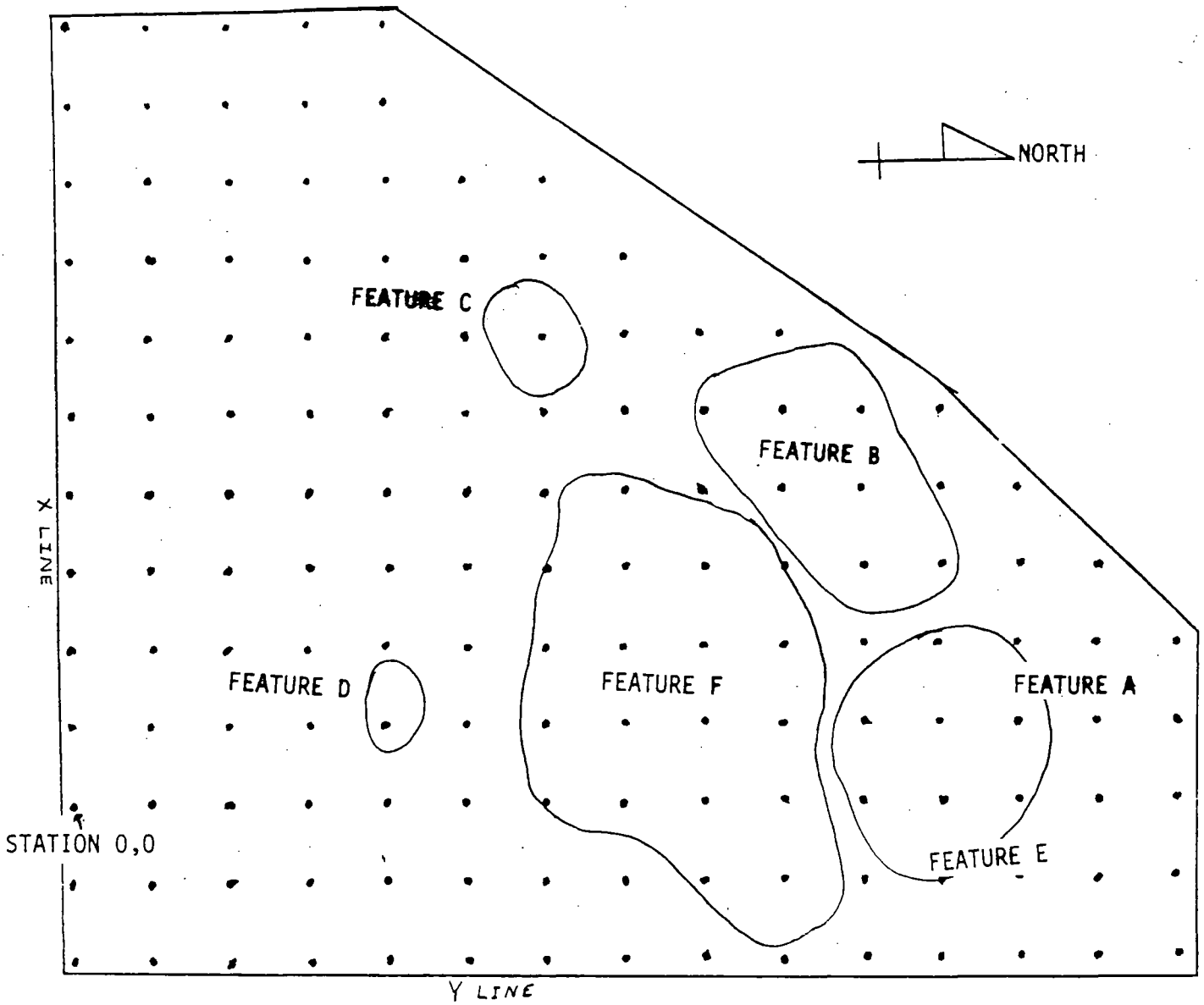
FIGURE 9



INTERPLASTIC EW VERTICAL QUAD

NOT TO SCALE

FIGURE 10



Scale: 50mm=1m

H.W. Enf
I(nplastics corp

SF-00006-05 (4/86)

P3 STATE OF MINNESOTA

Office Memorandum

DEPARTMENT : POLLUTION CONTROL AGENCY

DATE : OCT 23 1986

TO : Darryl Weakley
George Johnson
Hazardous Waste Enforcement

THRU:
FROM : Debra McGovern ~~DM~~
Jim Lundy JRL 10/22/86
Site Assessment Unit
Site Response Section

PHONE : 296-7818

SUBJECT : ELECTROMAGNETIC SURVEY AT INTERPLASTIC CORPORATION, MINNEAPOLIS

On September 24, 1986, Jay Frischman (DNR-Waters; 296-0517) and I conducted an electromagnetic survey on a portion of a paved asphalt parking lot owned by Interplastic Corporation, Minneapolis (Site). This survey was done as a supplement to the work of Darryl Weakley and George Johnson of the Hazardous Waste Section, who are Project Managers for this site. It is alleged that drums, possibly containing hazardous waste, have been improperly disposed of in a trench that now lies beneath the parking lot; this survey was designed to confirm their likely presence or absence.

The survey consisted of inphase and quadrature (conductivity) phase readings on a grid of north-south lines spaced 2.5 meters apart, and station spacings of 2.5 meters. The inphase survey detected a very strong anomaly of about 85 millimhos/meter, and the quadrature phase survey detected a plume-like anomaly extending to the southeast of the inphase anomaly. It seems clear that some metal object is buried in this location, although it is not possible on the basis of geophysics alone to say exactly what it is. A formal report on the geophysical survey will be issued soon by the Site Assessment Unit, in which all procedures, findings and conclusions will be stated.

A previous electromagnetic survey conducted by Hatcher Engineering on the southern end of the parking lot attempted to map the locations of buried metallic objects on-site, and concluded that none were present. However, we believe that this study should be considered highly suspect for the following reasons:

1) The instrument used (Geonics EM-34 electromagnetometer) is designed primarily for conductivity measurements at relatively deep levels, not for relatively shallow metal detection surveys;

2) The survey covered 1/3 to 1/2 of the area in question, yet the report's conclusions extrapolate to the entire site and are therefore specious;

3) The primary anomaly detected in that survey was located only a few meters from large amounts of surface metal, including cyclone fencing and a large (approximately 15 feet in diameter, 20 feet tall) above ground metal tank. These objects most likely interfered with the survey measurements, making the anomaly location, if not the anomaly itself, highly suspect.

4) The two clean auger holes prove only that no buried waste is in these locations to the depth of sampling. They cannot be taken as proof of the absence of waste elsewhere on the Site.

JL:mec

cc: Jay Frischman, DNR-Waters
Deb McGovern, MPCA

Report of Ground Water Monitoring
At
Interplastic Corporation
June 1, 1989

Prepared for:

Steve French
Interplastic Corporation
2015 Northeast Broadway
Minneapolis, MN 55413

Prepared by:

Precision Environmental
8251 Main Street Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

Printed June 28, 1989

Table of Contents

1.00 Introduction

The following report is a summary of ground water monitoring and sampling procedures conducted by Precision Environmental as requested by:

Steve French
Interplastic Corporation
2015 Northeast Broadway
Minneapolis, MN 55413

Monitoring and sampling procedures described in this report were performed at four ground water monitoring wells located at this address.

These monitoring wells are identified as follows:

MW-01
MW-02
MW-03
MW-04

This location will be referred to as the project site for the remainder of the report. Services provided by Precision Environmental were conducted in accordance with the sampling plan described in correspondence dated June 22, 1987 from Precision Environmental to Mr. Robert Hoffman of Interplastic Corporation.

2.00 Summary

Monitoring at the project site was conducted on June 1, 1989. As per the sampling plan a total of four samples were collected. The samples are listed below in the order of collection:

1. FB-01 (Field Blank)
2. MW-02
3. MW-03
5. MW-01

? MW-04 ?

No samples were collected from MW-01. The well casing was damaged which prevented stabilization and sampling. Monitoring data is summarized in Table 1 and 2. This data is summarized from ground water monitoring data sheets completed in the field. Copies of these forms are included in Appendix A.

Monitoring well samples were delivered to the laboratory for analysis by Precision Environmental personnel on June 2, 1989. The samples were delivered to:

Interpoll Laboratories
4500 Ball Road Northeast
Circle Pines, Minnesota 55014

Written chain of custody records were stored with the samples at all times. Copies of these records are enclosed in Appendix B. The original records were delivered to the laboratory with the samples. The samples delivered to the laboratory were designated the following analysis:

Acetone
Styrene

3.00 Summary of Monitoring Procedures

Monitoring and sampling results are summarized as follows:

Table 1	Monitoring Well Stabilization Data
Table 2	Sampling Data

The sample containers listed in Table 2 are as follows.

Container A	Collected for the analysis of Acetone and Styrene: Three 40 ml I-Chem series 200 flint glass vials with teflon lined septa. Prepared by I-Chem to protocol B.

Table 1
Monitoring Well Stabilization Data
Interplastic Corporation
Precision Environmental June 1, 1989

Stabilization Data	MW-01	MW-02	MW-03
Stabilization Date	6/1/89	6/1/89	6/1/89
Chronology	7	2	5
Casing Lock, Y or N	Y	Y	Y
Key Number	Well Key	Well Key	Well Key
Casing Diameter, in.	2.00	2.00	2.00
Casing Height, ft.	1.10	0.70	1.15
Static Depth, ft.	19.48	18.67	20.88
Casing Length, ft.	25.95	24.10	26.95
Column Length, ft.	6.47	5.43	6.07
Column Volume, gal.	1.06	0.89	0.99
Test Interval, gal.	3.00	3.00	4.00
Test Purging Method	1.8" Sub.	1.8" Sub.	1.8" Sub.
Test Start Time, hrs.	15:41	14:29	15:02
Test Stop Time, hrs.	15:46	14:33	15:11
R-1 Temperature, °C	13.0	12.0	13.0
R-2 Temperature, °C	13.0	12.0	13.0
R-3 Temperature, °C	13.0	12.0	13.0
Maximum Deviation, °C	<0.1	<0.1	<0.1
Mean Temperature, °C	13.0	12.0	13.0
R-1 Conductivity, umhos/cm	1100	1510	1390
R-2 Conductivity, umhos/cm	1100	1510	1390
R-3 Conductivity, umhos/cm	1100	1510	1390
Maximum Deviation, percent	<0.01	<0.01	<0.01
Mean Conductivity, umhos/cm	1100	1510	1390
R-1 pH, st'd units	6.9	6.8	6.7
R-2 pH, st'd units	6.9	6.8	6.7
R-3 pH, st'd units	6.9	6.8	6.7
Maximum Deviation, st'd units	<0.1	<0.1	<0.1
Mean pH, st'd units	6.9	6.8	6.7
Stabilized, Y or N	Y	Y	Y
Test Duration, hrs. : min.	0:05	0:04	0:09
Volume Purged, gal.	5.0	4.0	5.00
Casing Volumes Purged	4.74	4.51	5.05
Total Test Purge Rate, gpm	1.00	1.00	0.56
Pumped Dry, Y or N	N	N	N
Recovery Rate, gpm	NA	NA	NA
Field Work By	JWM	JWM	JWM

1.8" Sub. = 1.8" Submersible Pump

Table 2
Sampling Data
Interplastic Corporation
Precision Environmental June 1, 1989

Sampling Data	MW-01	MW-02	MW-03	FB-01
Matrix	Water	Water	Water	Water
Time Collected, hrs.	15:50	14:45	15:20	14:40
Date Collected	6/1/89	6/1/89	6/1/89	6/1/89
Chronology	8	4	6	3
Sample Appearance				
Color	Clear/Brown	None	None	None
Turbidity	Medium	Clear	Clear	Clear
Phases	None	None	None	None
Odor	Solvent	Solvent	Solvent	Clear
Weather Data				
Ambient Temperature, °C	23	23	23	23
Percent Overcast	50	50	50	50
Precipitation	None	None	None	None
Wind Direction, Est. MPH	NW, 0-5	NW, 0-5	NW, 0-5	NW, 0-5
Sampling Method*	Method	Method	Method	Method
Container A	1	1	1	2

*Sampling Method

Method # 1 Collected using a stainless steel bailer after stabilization testing.
Method # 2 Deionized water rinse sample from a stainless steel bailer.

Analytical Results	MW-01	MW-02	MW-03	FB-01
Acetone, ug/L	<11000	<22	<22	*
Styrene, ug/L	33000	<0.38	<0.38	*

* Analysis not conducted.

Appendix A

Field Data Forms

PRECISION ENVIRONMENTAL	GROUND WATER MONITORING DATA SHEET	Page 1 of 2

Client: INTERFACETEC'S | Project Title: GW MONITORING

Address: 2015 NE BROADWAY | Project Number: F12-W1

City, State Zip: MPLS MN 55413 | Contact: STEVE FRENCH

General Data

Location I.D.: MW-01

Date: 6-1-89

Chron.: 7

Casing Lock: (Y) N

Key No.: WELL KEY

Casing Dia., in.: 2"

Casing Stick-up, ft.: 1.10

Static Depth, ft.: 19.48

Casing Length, ft.: 25.95

Column Lenth, ft.: 6.47

Column Vol., gal.: 1.05

Development/Purge Data (NA)

Result:

Vol. Purged, gal.:

Method:

Start Time, hrs.:

Stop Time, hrs.:

Duration, min.:

Rate, gpm:

Casing Vol. Purged:

Stabilization Data NA

Stabilized (Y) N

Casing Vols. Required: 3.0

Vol. Interval, gal: 1.5

Method: 1.8 SUB

Start Time, hrs.: ~~1541~~ 1541

Stop Time, hrs. 1546

Duration, min.: 5.0

Vol. Purged, gal: 5.0

Casing Vol. Purged: 4.74

Purge Rate, gpm: 1.0

Form Completed by: JWM

Stabilization Test

Calibration Check (4) (7) (10)

Vol. No.	Time	Vol, gal.	Temp, °C	SC, umhos	pH, units	Other
1	1543	1.5	13.0	1100	6.9	✓
2	1544	3.0	13.0	1100	6.9	✓
3	1545	4.5	13.0	1100	6.9	✓
4						
5						
6						
7						
8						
9						
10						
Maximum Result			13.0	1100	6.9	
Minimum Result			13.0	1100	6.9	
Difference			<0.1	<0.1 %	<0.1	

Recovery Rate Data (NA)

Recovery Rate, gpm:

Purge Method:

Initial Static Depth, ft.:

Final Static Depth, ft.:

Test Time, min.:

Recovery, ft.:

Recovery, gal.:

Weather Data

Ambient Temp., °C: 23.0

Percent Overcast: 50%

Precipitation: NONE

Wind Dir., Est. MPH: NW-0-5

Sampling Data

Samples Collected (Y) N

SCDS Attached (Y) N

Comments:

Date Completed: 6-1-89

Present On-site: JWM

PRECISION ENVIRONMENTAL	SAMPLE COLLECTION DATA SHEET	Page 2 of 2

Client: INTERPLASTICS	Project Title: GW MONITORING
Address: 2015 NE BROADWAY	Project Number: F126-GW
City, State Zip: Mpls MN 55413	Contact: STEVE FRENCH

Sample I.D.: MW-01	Comments or Diagrams:
Matrix: WATER	
Time Collected: 1550	
Date Collected: 6-1-89	
Chronology: 8	
Sample Appearance	
Color: CLEAR/BROWNISH	
Phases: —	
Odor: STRONG SOLVENT	
General Appearance: BROWNISH-GRAY [redacted]	
Ambient Temp., °C: 23.0	
Percent Overcast: 50%	
Precipitation NONE	
Wind Dir., Est. MPH: NW-05	

Sampling Method #1	SAMPLED USING A STAINLESS BAILER
Sampling Method #2	
Sampling Method #3	

I.D.	Quantity	Dist.	Material	Type	Size	Preparation	Preservative	Method #
A	3	IC	P	SV	40	2500-B	NONE	1
B								
C								
D								
E								
F								

Field Parameters	Result	Method	MDL	Calibration
PH	6.9	FISHMAN	.01	7-10 BUFFERS
SC	1100	YSI S-C-T	20	REDLINE-CELL
TEMP	14.0	YSI S-C-T	20	REDLINE-CELL

Form Completed by: JWM	Date Completed: 6-1-89	Present On-site: JWM

PRECISION ENVIRONMENTAL

GROUND WATER MONITORING DATA SHEET

Client: INTERPLASTICS
Project Title: GW MONITORING
Address: 2015 N.E BROADWAY
Project Number: F126-M
City, State Zip: MPLS MN 55433
Contact: STEVE FRENCH

General Data	
Location I.D.	MW-2
Date:	6-1-89
Chron.:	2
Casing Lock:	(Y) N
Key No.:	WELL KEY
Casing Dia., in.:	2"
Casing Stick-up, ft.:	.70
Static Depth, ft.:	18.67
Casing Length, ft.:	24.10
Column Lenth, ft.:	5.43
Column Vol., gal.:	.89
Development/Purge Data	(NA)
Result:	
Vol. Purged, gal.:	
Method:	
Start Time, hrs.:	
Stop Time, hrs.:	
Duration, min.:	
Rate, gpm:	
Casing Vol. Purged:	
Stabilization Data	NA
Stabilized	(Y) N
Casing Vols. Required:	3.0
Vol. Interval, gal:	1.0
Method:	1.8 SUB
Start Time, hrs.:	1429
Stop Time, hrs.	1433
Duration, min.:	4.0
Vol. Purged, gal:	4.0
Casing Vol. Purged:	4.51
Purge Rate, gpm:	1.0

Stabilization Test

Calibration Check: 4 (7) (10)

Vol. No.	Time	Vol, gal.	Temp, °C	SC, umhos	pH, units	Other
1	1430	1.0	12.0	1510	6.8	✓
2	1431	2.0	12.0	1510	6.8	✓
3	1432	3.0	12.0	1510	6.8	✓
4						
5						
6						
7						
8						
9						
10						
Maximum Result			12.0	1510	6.8	
Minimum Result			12.0	1510	6.8	
Difference			<0.1	<0.1 %	<0.1	

Recovery Rate Data (NA)

Recovery Rate, gpm:
Purge Method:
Initial Static Depth, ft.:
Final Static Depth, ft.:
Test Time, min.:
Recovery, ft.:
Recovery, gal.:

Weather Data

Ambient Temp., °C: 22.0
Percent Overcast: 50%
Precipitation: NONE
Wind Dir., Est. MPH: NW-0-5

Sampling Data

Samples Collected (Y) N
SCDS Attached (Y) N

Comments:

Form Completed by: JWM
Date Completed: 6-1-89
Present On-site: JWM

PRECISION ENVIRONMENTAL	SAMPLE COLLECTION DATA SHEET	Page 2 of 2

Client: INTERPLASTICS	Project Title: GW MONITORING
Address: 2015 N.E BROADWAY	Project Number: F126-M
City, State Zip: MPLS MN 55433	Contact: STEVE FRENCH

Sample I.D.: MW-02	Comments or Diagrams:
Matrix: WATER	
Time Collected: 1445	
Date Collected: 6-1-89	
Chronology: 3 4	
Sample Appearance	
Color: —	
Phases: —	
Odor: SLIGHT SILENT	
General Appearance: CLEAR	
Ambient Temp., °C: 23.0	
Percent Overcast: 50%	
Precipitation NONE	
Wind Dir., Est. MPH: NW-0-5	

Sampling Method #1	SAMPLED USING A SCAINLESS BAILER
Sampling Method #2	
Sampling Method #3	

I.D.	Quantity	Dist.	Material	Type	Size	Preparation	Preservative	Method #
A	3	IC	F	SV	40	2500-B	NONE	1
B								
C								
D								
E								
F								

Field Parameters	Result	Method	MDL	Calibration
PH	6.8	BECKMAN	.01	7-10 BUFFERS
SC	1510	YSI S-C-T	20	REDLINE - CELL
TEMP	12.0	YSI S-C-T	20	REDLINE - CELL

Form Completed by: JWW	Date Completed: 6-1-89	Present On-site: JWW

PRECISION ENVIRONMENTAL	GROUND WATER MONITORING DATA SHEET	Page 1 of 2

Client: INTERPLASTICS | Project Title: GW MONITORING

Address: 2015 N.E BROADWAY | Project Number: F126-M

City, State Zip: MPLS MN 55433 | Contact: STEVE FRENCH

General Data

Location I.D. MW-03

Date: 6-1-89

Chron.: 5

Casing Lock: (Y) N

Key No.: WELL KEY

Casing Dia., in.: 2"

Casing Stick-up, ft.: 1.15

Static Depth, ft.: 20.88

Casing Length, ft.: 26.95

Column Lenth, ft.: 6.07

Column Vol., gal.: .99

Development/Purge Data (NA)

Result:

Vol. Purged, gal.:

Method:

Start Time, hrs.:

Stop Time, hrs.:

Duration, min.:

Rate, gpm:

Casing Vol. Purged:

Stabilization Data NA

Stabilized (Y) N

Casing Vols. Required: 40

Vol. Interval, gal: 1.0

Method: 1.5 SUB

Start Time, hrs.: 1502

Stop Time, hrs. 1511

Duration, min.: 9.0

Vol. Purged, gal: 5.0

Casing Vol. Purged: 5.05

Purge Rate, gpm: .56

Form Completed by: JWM

Stabilization Test

Calibration Check | 4 (7) (10)

Vol. No.	Time	Vol, gal.	Temp, °C	SC, umhos	pH, units	Other
1	1503	1.0	13.0	1400	6.7	
2	1505	2.0	13.0	1390	6.7	✓
3	1507	3.0	13.0	1390	6.7	✓
4	1510	4.0	13.0	1390	6.7	✓
5						
6						
7						
8						
9						
10						
Maximum Result			13.0	1390	6.7	
Minimum Result			13.0	1390	6.7	
Difference			<0.1	<0.1 %	<0.1	

Recovery Rate Data NA

Recovery Rate, gpm:

Purge Method:

Initial Static Depth, ft.:

Final Static Depth, ft.:

Test Time, min.:

Recovery, ft.:

Recovery, gal.:

Weather Data

Ambient Temp., °C: 23.0

Percent Overcast: 50%

Precipitation: NONE

Wind Dir., Est. MPH: NW 0-5

Sampling Data

Samples Collected (Y) N

SCDS Attached (Y) N

Comments: SLTY GRAY 1ST Vol. CLEARED AFTER 1 GAL - DROP IN SC, UMHOS TOOK 1 MORE Vol,

Date Completed: 6-1-89

Present On-site: JWM

PRECISION ENVIRONMENTAL	SAMPLE COLLECTION DATA SHEET	Page of

Client: INTERPLASTICS	Project Title:
Address:	Project Number:
City, State Zip:	Contact:

Sample I.D.: MW-03	Comments or Diagrams:
Matrix: WATER	
Time Collected: 1520	
Date Collected: 6-1-89	
Chronology: L	
Sample Appearance	
Color: —	
Phases: —	
Odor: ~~NN~~ SLIGHT SOLVENT	
General Appearance: CLEAR SOME SOLIDS	
Ambient Temp., °C: 23.0	
Percent Overcast: 30%	
Precipitation NONE	
Wind Dir., Est. MPH: NW-0-5	

Sampling Method #1	SAMPLED USING A STAINLESS BAILER
Sampling Method #2	
Sampling Method #3	

I.D.	Quantity	Dist.	Material	Type	Size	Preparation	Preservative	Method #
A	3	IC	F	SV	40	~~5200~~ 2500-B	NONE	1
B								
C								
D								
E								
F								

Field Parameters	Result	Method	MDL	Calibration
PH	6.7	BECKMAN	.01	7-10 BUFFERS
SC	1390	YSI S-C-T	20	RED LINE - CEL.
TEMP	13.5	YSI S-C-T	20	RED LINE - CEL

Form Completed by: JWM	Date Completed: 6-1-89	Present On-site: JWM

PRECISION ENVIRONMENTAL	GROUND WATER MONITORING DATA SHEET	Page 1 of 2

Client: INTERMETRICS | Project Title: GW MONITORING

Address: 2015 N.E BROADWAY | Project Number: FIZL-IM

City, State Zip: MPLS MN 55413 | Contact: STEVE FRENCH

General Data

Location I.D. MW-04

Date: 6-1-89

Chron.: 1

Casing Lock: (Y) N

Key No.: - WELL KEY

Casing Dia., in.: 6.5

Casing Stick-up, ft.: 1.30

Static Depth, ft.: 17.60

Casing Length, ft.: 43.37

Column Lenth, ft.: 25.77

Column Vol., gal.: 44.42

Development/Purge Data (NA)

Result:

Vol. Purged, gal.:

Method:

Start Time, hrs.:

Stop Time, hrs.:

Duration, min.:

Rate, gpm:

Casing Vol. Purged:

Stabilization Data NA

Stabilized Y (N)

Casing Vols. Required: —

Vol. Interval, gal: 45.0

Method: 1.8 GAL

Start Time, hrs.: 1330

Stop Time, hrs. 1403

Duration, min.: 33.0

Vol. Purged, gal: 6.0

Casing Vol. Purged: 0.13

Purge Rate, gpm: 0.18

Stabilization Test

Calibration Check | 4 (7) (10)

Vol. No.	Time	Vol, gal.	Temp, °C	SC, umhos	pH, units	Other
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Maximum Result						
Minimum Result						
Difference				%		

Recovery Rate Data (NA)

Recovery Rate, gpm:

Purge Method:

Initial Static Depth, ft.:

Final Static Depth, ft.:

Test Time, min.:

Recovery, ft.:

Recovery, gal.:

Weather Data

Ambient Temp., °C: 23 C

Percent Overcast: 50%

Precipitation: NONE

Wind Dir., Est. MPH: NW-0-5

Sampling Data

Samples Collected Y (N)

SCDS Attached Y (N)

Comments: PUMP RATE SLOW BLACK SILTY MAT. BLINDING SCREEN. STOP 2:03 PUMPED 6 GAL IN 33MIN. SCREEN PACKED WITH BLACK DIRT.

WELL CASING WAS HIT WITH SOMETHING? WELL OUT OF ROUND UNABLE TO UNLOCK ONE SIDE WELL CASING MIGHT BE CRACKED VERY HARD TIME GETTING PUMP HEAD DOWN WELL. NO SAMPLES COLLECTED

Form Completed by: JWM | Date Completed: 6-1-89 | Present On-site: JWM

PRECISION ENVIRONMENTAL	SAMPLE COLLECTION DATA SHEET	Page 2 of 2

Client: INTERPLASTICS	Project Title: GW MONITORING
Address: 2015 NE BROADWAY	Project Number: F126-M
City, State Zip: MPLS MN 55413	Contact: STEVE FRENCH

Sample I.D.: FB-01	Comments or Diagrams:
Matrix: WATER	
Time Collected: 1440	
Date Collected: 6-1-89	
Chronology: 2 3	
Sample Appearance	
Color: —	
Phases: —	
Odor: [redacted]	
General Appearance: CLEAR	
Ambient Temp., °C: 23.0	
Percent Overcast: 50%	
Precipitation NONE	
Wind Dir., Est. MPH: NW-0-5	

Sampling Method #1	DI WATER POURED OVER AND THRU A STAINLESS BAILER
Sampling Method #2	
Sampling Method #3	

I.D.	Quantity	Dist.	Material	Type	Size	Preparation	Preservative	Method #
A	3	IC	F	SV	40	2500-B	NONE	1
B								
C								
D								
E								
F								

Field Parameters	Result	Method	MDL	Calibration
PH	—			
SC	—			
TEMP	—			

Form Completed by:	Date Completed:	Present On-site:

Appendix B

Laboratory Report

interpoll

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

June 12, 1989

Precision Environmental Services, Inc.
8251 Main St., NE
Minneapolis, MN 55432

Attention: John Gleason

LABORATORY REPORT: #7788
PRECISION PROJECT: #F126-M*

SAMPLES COLLECTED: June 1, 1989
SAMPLES RECEIVED: June 2, 1989

Sample Identification:			MW-01	MW-02	MW-03
Sample Type:			Water	Water	Water
Laboratory Log Number:			7788-02	7788-03	7788-04
Parameter	Units	EPA Method			
Acetone	ug/L	602	< 11000	< 22	< 22
Styrene	ug/L	602	33000	< 0.38	< 0.38

Respectfully submitted,

Wayne A. Olson, Manager
Organic Chemistry Department

WAO/cg
Invoice Enclosed
< = less than

* Laboratory report for Interplastic Corporation
2015 Northeast Broadway

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

Appendix C

Chain of Custody

PRECISION ENVIRONMENTAL	CHAIN OF CUSTODY RECORD	No. 89-169 Page 1 of 1

Client: INTERPLASTICS | Project Title: GW MONITORING

Address: 2015 N.E BROADWAY | Project Number: F126-M

City, State Zip: MPLS MN 55413 | Contact: STEVE FRENCH

Item No.	Sample No.	Sample Description	Matrix	Date Collected	Containers
1	~~FB 23089~~	FB-01	WATER	6-1-89	3
2	23189	MW-01	WATER	6-1-89	3
3	23289	MW-02	WATER	6-1-89	3
4	23389	MW-03	WATER	6-1-89	3
5					
6					
7					
8					
9					
10					

Samples Collected by: JWM | Delivered by: TGH | Date Delivered: 6-2-89

Destination: INTERROLL

Contact: WAYNE NASH

Date Due: 6-15-89

Analysis Cost: 375.00

Send Original Report To:

JOHN GLEASON
PRECISION

NA

Send Copy Report To:

(NA)

Analysis	Units	1	2	3	4	5	6	7	8	9	10
ACETONE	UG/L	5	✓	✓	✓						
STYRENE	UG/L	5	✓	✓	✓						

Item No.	Relinquished by	Received by	Date	Airbill or Manfest No.
1-4	[signature]	[signature]	6-2-89	—

Original Copy - Samples | Pink Copy - Data | Yellow Copy - Data Processing

Form Completed by: JWM | Date Completed: 6-2-89 | Present On-site: TWM

Report of Ground Water Monitoring
At
Interplastic Corporation
February 21, 1989

Prepared for:

Steve French
Interplastic Corporation
2015 Northeast Broadway
Minneapolis, MN 55413

Prepared by:

Precision Environmental
8251 Main Street Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

Printed March 15, 1989

interpoll

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

March 1, 1989

Precision Environmental Services, Inc.
8251 Main St., NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #7422
PRECISION PROJECT: #F126-GW

SAMPLES COLLECTED: February 21, 1989
SAMPLES RECEIVED: February 23, 1989

Sample Identification:		MW-04	FB-01	MW-02	MW-03	MW-01
Sample Type:		Water	Water	Water	Water	Water
Laboratory Log Number:		7422-01	7422-02	7422-03	7422-04	7422-05
Parameter	Units					
EPA Method SW-846, 8020:						
Acetone	ug/L	< 22	< 22	< 22	< 22	26000
Styrene	ug/L	< 2.2	< 2.2	< 2.2	< 2.2	53000

Respectfully submitted,

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
Invoice Enclosed
< = less than

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

Report of Ground Water Monitoring

At

Interplastic Corporation

December 8, 1988

Prepared for:

Robert C. Hoffman
Interplastic Corporation
2015 Northeast Broadway
Minneapolis, MN 55413

Prepared by:

Precision Environmental
8251 Main Street Northeast
Minneapolis, Minnesota 55432-1849
(612) 780-9787

Printed January 25, 1989

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

January 12, 1989

Precision Environmental Services, Inc.
8251 Main St., NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #7143R
PRECISION PROJECT: #F126-GW

SAMPLES COLLECTED: December 8, 1988
SAMPLES RECEIVED: December 9, 1988

Sample Identification:	FB-01 47188***	MW-1 47288***	MW-2 47388***	MW-3 47488***	MW-4 47588***
Sample Type:	Water*	Water	Water**	Water	Water
Laboratory Log Number:	7143-01	7143-02	7143-03	7143-04	7143-05
Parameter / Units					
EPA Method SW-846, 8020:					
Styrene ug/L	< 2.2	77000	< 11	< 2.2	< 2.2
Acetone ug/L	120	170000	230	< 22	42

Respectfully submitted,

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
< = less than

*The concentration reported for acetone was not due to laboratory contamination.

**Detection limit for styrene was raised due to a dilution required to allow for the quantitation of the acetone present in the sample.

*** Laboratory report for Interplastic Corporation

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

Report of Ground Water Monitoring

at

Interplastic Corporation
Minneapolis, Minnesota

August 8, 1988

Prepared For:

Bob Hoffman
Interplastic Corporation
2015 Northeast Broadway
Minneapolis, MN 55433

Prepared by:

PRECISION
Environmental Services, Inc.
8251 Main Street Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

interpoll

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

Interplastic-GW
F126-GW
AUG 18 1988

Precision Environmental Services, Inc.
8251 Main Street, NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #6561 August 12, 1988
PRECISION PROJECT: #F126-GW

SAMPLES COLLECTED: August 9, 1988
SAMPLES RECEIVED: August 10, 1988

		14888
Sample Identification:		MW-1
Sample Type:		Water
Laboratory Log Number:		6561-01
Parameter	Units	
Styrene	ug/L	610000

Respectfully submitted,

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
Invoice Enclosed

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

interpoll

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

Interplastic Groundwater
F126-GW

Precision Environmental Services, Inc.
8251 Main Street, NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #6562A August 26, 1988
STS PROJECT: #F126-GW

SAMPLES COLLECTED: August 9, 1988
SAMPLES RECEIVED: August 10, 1988

		14988	15088	15188	15288
Sample Identification:		MW-1	MW-2	MW-3	MW-4
Sample Type:		Water	Water	Water	Water
Laboratory Log Number:		6562-01*	6562-02	6562-03	6562-04
Parameter	Units				
Acetone**	ug/L	186000	< 100	< 100	< 100
Styrene**	ug/L	346000	< 5	87	< 5

Respectfully submitted,

Wayne A. Olson,
Organic Chemistry Department Manager

GWH/WAO/cg
Invoice Enclosed
< = less than

*Detection limit for acetone in sample was raised due to a dilution required to allow for the quantitation of the styrene present.

**Samples run 8/17/88.

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

Report of Ground Water Monitoring

at

Interplastic Corporation
Minneapolis, Minnesota

April 19, 1988

Prepared by:

PRECISION
Environmental Services, Inc.
8251 Main Street Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

interpoll

INTERPOLL LABORATORIES
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

Precision Environmental Services, Inc.
8009 Ranchers Road, NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #6069 April 27, 1988
PRECISION PROJECT: #F126-M

SAMPLES COLLECTED: April 19, 1988
SAMPLES RECEIVED: April 19, 1988

Laboratory Log No.	Sample Identification	Sample Type	Styrene ug/L	Acetone ug/L
6069-01	5788	Water	64000	< 1000
6069-02	5888	Water	4	< 20
6069-03	5988	Water	3000	< 20
6069-04	6088	Water	10	< 20

Respectfully submitted,

Wayne A. Olson

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
Invoice Enclosed
< = less than

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

Report of Ground Water Monitoring

at

Interplastics Corporation
Minneapolis, Minnesota

February 2, 1988

Prepared by:

PRECISION
Environmental Services, Inc.
8009 Ranchers Road Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

interpoll

INTERPOLL INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014
612/786-6020

Precision Environmental Services, Inc.
8009 Ranchers Road, NE
Minneapolis, MN 55432

Attention: Randy Plante

LABORATORY REPORT: #5772 February 22, 1988
PRECISION PROJECT: #F126-M

SAMPLES COLLECTED: February 2, 1988
SAMPLES RECEIVED: February 2, 1988

		MW-1	MW-2	MW-3	MW-4
Sample Identification:		1288	1388	1488	1588
Sample Type:		Water	Water	Water	Water
Laboratory Log Number:		5772-01	5772-02	5772-03	5772-04
Parameter	Units				
Styrene	ug/L	14000	4.2	14000	< 1
Acetone	ug/L	120000	24	71000	17
Ethyl benzene	ug/L	18000	120	9600	< 1

Respectfully submitted,

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
Invoice Enclosed
< = less than

All analyses were performed using EPA or other
All units are on an "as received" basis unless

Report of Ground Water Monitoring

at

Interplastics Corporation
Minneapolis, Minnesota

December 8, 1987

Prepared by:

PRECISION
Environmental Services, Inc.
8009 Ranchers Road Northeast
Minneapolis, Minnesota 55432
(612) 780-9787

Table 1

Sampling and Analytical Data
Report of Ground Water Monitoring
Interplastics Corporation
PRECISION December 8, 1987

Data	MW 01	MW 02	MW 03	MW 04
Monitoring Date	120887	120887	120887	120887
Chronology, Total-Daily-Day	1	2	4	3
Precipitation	None	None	Rain	Rain
Wind Direction and Estimated MPH	NW, 5-10	NW, 5-10	Calm, 0	Calm, 0
Ambient Temperature, C	4.0	4.0	3.0	3.0
Percent Overcast	100	100	100	100
Stabilized, Y or N	Y	Y	Y	Y
Samples Collected, Y or N	Y	Y	Y	Y
Time of Sampling, hrs	1130	1215	1430	1400
Sample Containers				
IC-S200-F-SV	3	3	3	3
IC-S200-A-B	1	1	1	1
Analytical Results				
Styrene, mg/l	1200	0.024	950	0.015
Acetone, mg/l	53	0.029	20	0.011
Ethylbenzene, mg/l *	340	0.003	910	0.008
Field Work By	RLP	RLP	RLP	RLP

* This parameter was not required by the sampling plan but reported due to the concentration.

SUBSURFACE CONTAMINATION INVESTIGATION

INTERPLASTIC CORPORATION

MINNEAPOLIS, MINNESOTA

JANUARY 8, 1986

#4231 86-44

twin city testing
corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

January 8, 1986

Interplastic Corporation
2015 N.E. Broadway
Minneapolis, Minnesota

Attn: Mr. Robert DeLeo

Subj: Subsurface Contamination Investigation
Interplastic Corporation
Minneapolis, Minnesota
#4231 86-44

Dear Mr. DeLeo:

We have completed the initial subsurface contamination investigative work as authorized by you on November 20, 1985, (Purchase Order #MP00024149). Attached is a copy of our report presenting the results from our subsurface investigation and analytical testing of ground water recovered from the above referenced site. The purpose of our work was to drill three test soil borings and install three monitoring wells in order to evaluate the environmental impact associated with the maintenance of several buried storage tanks and dispensing line factilities.

Should you have any questions or require additional information, please contact me at (612) 641-9358.

Very truly yours,

Twin City Testing Corporation

Tod D. Christenson
Geochemist/Project Manager

TDC/jr

Encs

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INTERPLASTIC CORPORATION

MINNEAPOLIS, MINNESOTA

#4231 86-44

1.0 INTRODUCTION

Twin City Testing Corporation (TCT) was authorized by Mr. Robert DeLeo of Interplastic Corporation on November 20, 1985 to perform a limited subsurface contamination investigation at the above referenced site. The purpose of our work was to evaluate the environmental impact resulting from the storage and dispensing of various organic liquids at the site. Specifically, the scope of our work included the following.

1. Mobilizing to the site on December 6, 1985 from our St. Paul, Minnesota office.
2. Drilling a total of three soil test borings at locations determined by TCT, Interplastic Corporation and the Minneapolis Pollution Control Division.
3. Installing water table monitoring wells at each of the test soil boring locations.
4. Making physical observations regarding soil conditions and contamination.
5. Collecting soil samples for classification.
6. Developing each of the newly installed monitoring wells.
7. Collecting representative ground water samples from each of the installed monitoring wells for chemical analysis.

8. Analyzing collected ground water samples for the chemical parameters listed in Table 2 of this report.

9. Preparing a factual report presenting results of our work.

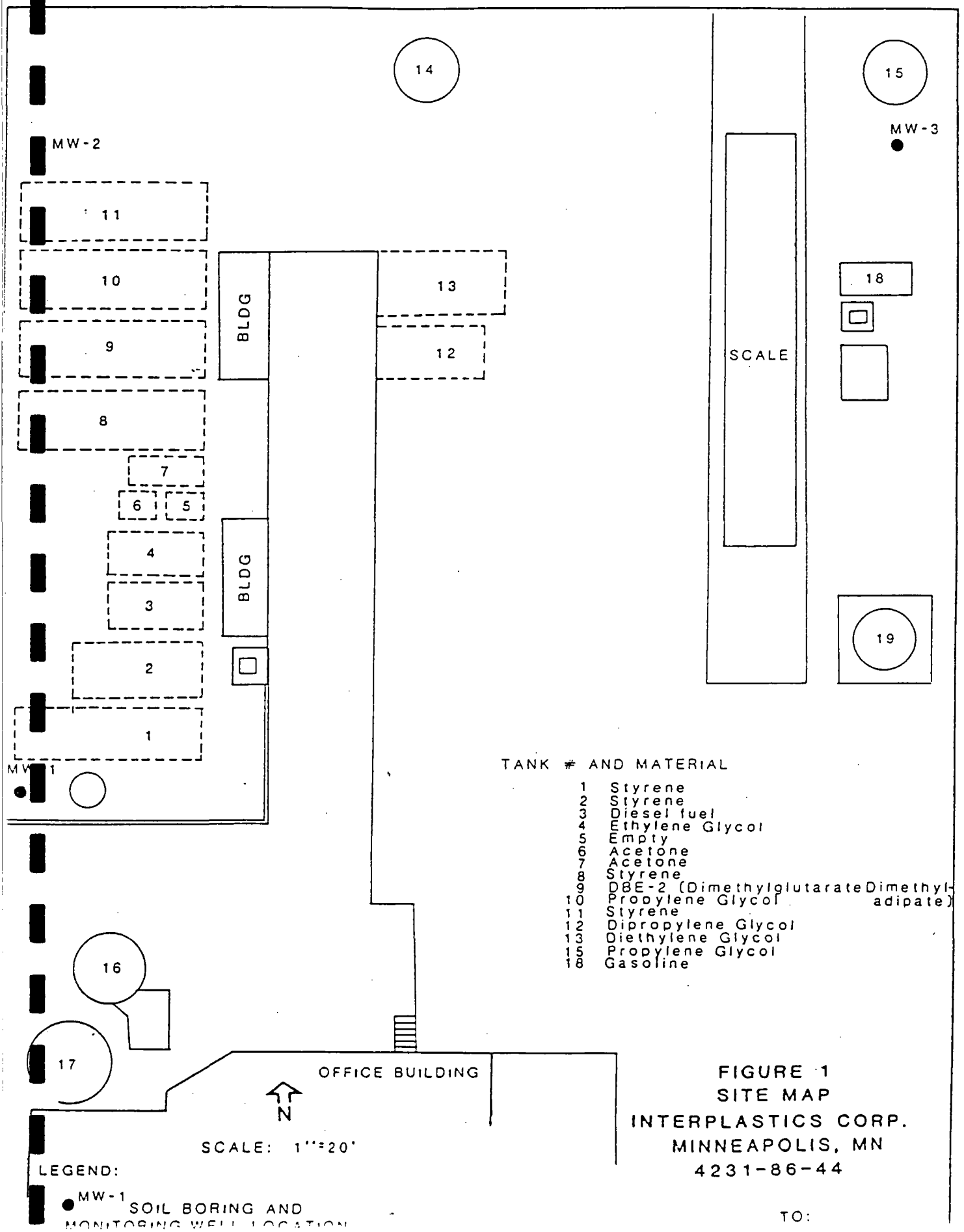
2.0 BACKGROUND INFORMATION

Interplastic Corporation is located at 2015 N.E. Broadway in Minneapolis, Minnesota. Interplastic Corporation maintains many below ground and above ground storage tanks and dispensing facilities for various organic liquids used in their manufacturing process. Interplastic Corporation manufactures polyester resin used in the making of plastics. Figure 1 illustrates the portion of the site where the subsurface investigative work was performed. Illustrated and identified on Figure 1 are the many tanks and organic liquids stored and dispensed at this site.

3.0 RESULTS

3.1 Soil Borings

Three soil borings were drilled at the locations indicated in Figure 1. The locations for the soil borings were determined by TCT, Interplastic Corporation and Minneapolis Pollution Control personnel. Results of the soil borings are presented on the soil boring logs attached in Appendix A.



TANK # AND MATERIAL

1	Styrene
2	Styrene
3	Diesel fuel
4	Ethylene Glycol
5	Empty
6	Acetone
7	Acetone
8	Styrene
9	DBE-2 (Dimethylglutarate Dimethyl-adipate)
10	Propylene Glycol
11	Styrene
12	Dipropylene Glycol
13	Diethylene Glycol
15	Propylene Glycol
18	Gasoline

FIGURE 1
SITE MAP
INTERPLASTICS CORP.
MINNEAPOLIS, MN
4231-86-44

TO:

In general, the site is underlain by sand and silty sand fill material and sandy alluvial deposits, respectively. Fill soils were encountered at each boring location to a maximum depth of 7' below the surface. With the exception of boring location 3, coarse alluvial deposits consisting of sand with silt and a little gravel were encountered beneath the fill. A thin layer of hemic peat was encountered below the fill at boring location 3. All borings terminated in the sandy coarse alluvial deposits.

3.2 Monitoring Well Installations

A water table monitoring well was installed in each of the soil borings. The construction details for each of the monitoring wells are attached in Appendix B.

3.3 Ground Water

Ground water was observed during drilling at the approximate times and depths noted on the attached boring logs. Due to the relatively short time span in which the borings were put down, and water levels were measured, the ground water levels reported during drilling may not represent stabilized ground water levels. However, water level measurements made in site monitoring wells should represent stable conditions. Ground water level information was collected from all monitoring wells following the stabilization on December 11, 1985. Figure 2 represents a water table contour map generated from the December 11, 1985 water level data. Water level data is also presented in tabulated form in Table 1.

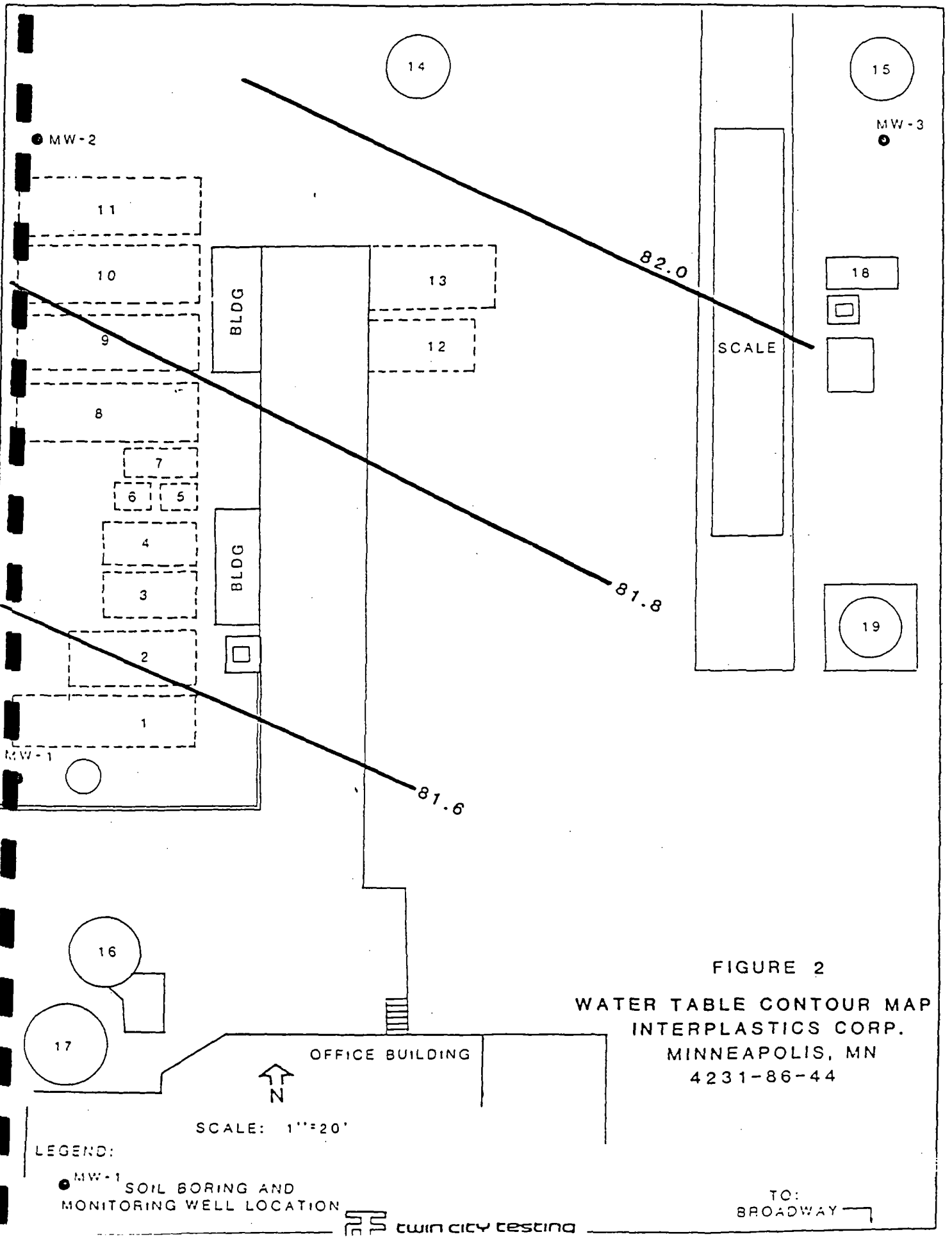


FIGURE 2

WATER TABLE CONTOUR MAP
INTERPLASTICS CORP.
MINNEAPOLIS, MN
4231-86-44

twin city testing

TABLE #1
WATER LEVEL AND ELEVATION DATA
INTERPLASTICS CORPORATION
MPLS., MN.
#4231 86-44

Location	Depth to Groundwater	Reference Elevation	Groundwater Elevation	Date
MW-1	18.59	100.08	81.49	12/11/85
MW-2	17.83	99.75	81.92	12/11/85
MW-3	20.00	102.15	82.15	12/11/85

Presently, ground water is present below the site at depths ranging from 14.7' to 17.6' below the surface. Based on the water level data information, it appears ground water flow is to the south-southwest through the site.

3.4 Contamination

Physical observation using appearance and odor as criteria were recorded at the time of drilling and are presented on the attached boring logs. Strong chemical odors (unidentified in the field) were detected at each boring location at various depths.

3.5 Analytical Results

Following installation and development of the respective monitoring wells, representative ground water samples were collected from each monitoring well for the chemical parameters listed in Table 2. Table 2 presents the results of the analyses. A total of three different compounds were detected during the analyses. These included: acetone, styrene and V. M. and P. Naptha. Acetone was detected at monitoring well locations 1 and 2 at concentrations of 4 and 340 milligrams per liter (parts per million), respectively. Styrene was detected at concentrations of 300 and 180 ppm at monitoring well locations 1 and 3, respectively. V. M. and P Naptha compounds were detected only at monitoring well location 2 at a concentration of 200 ppm. It is important to point out that several unidentified peaks were present on each of the respective gas chromatograms

TABLE #2
ANALYTICAL RESULTS
INTERPLASTICS CORP.
MINNEAPOLIS, MN.
#4231 86-44

Parameter	MW-1 (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	Lower Detectable limit (mg/L)
Acetone	4*	340*	ND*	2
Styrene	300	ND	180	5
Ethylene Glycol	ND	ND	ND	1
Dimethyl Adipate	ND	ND	ND	1
Dimethyl Glutarate	ND	ND	ND	1
Propylene Glycol	ND	ND	ND	1
Dipropylene Glycol	ND	ND	ND	1
Diethylene Glycol	ND	ND	ND	1
Gasoline	ND	ND	ND	1
Xylene	ND	ND	ND	1
VM P Naptha	ND	200	ND	1
Mineral Spirits	ND	ND	ND	1
Vinyl Toluene	ND	ND	ND	1

*Several unidentified peaks present in all samples.
ND = Not Detected

APPENDIX A

for samples collected from monitoring wells 1, 2 and 3. The scope of our work did not include identification and quantification for these compounds. Additional testing would be necessary to identify and quanitfy these compounds.

3.6 Minneapolis Monitoring Well Permit

TCT has fulfilled Interplastic Corporation's obligation requiring the acquisition of a permit for monitoring well installations within the City of Minneapolis. The permit process essentially involves paying a fee of $50.00 to the Minneapolis Pollution Control Division.

4.0 CONCLUSIONS

Based on the results of our limited work scope, we conclude the following.

1. The site is underlain by fill and natural alluvial deposits consisting of sand and silty sand.
2. Ground water is present at the site at depths ranging from 14.7' to 17.6' below the surface.
3. Ground water flow is to the south-southwest through the site.
4. Soil and ground water has been impacted by organic chemicals stored and dispensed at this site.

5.0 FIELD EXPLORATION PROCEDURES

5.1 Soil Sampling

Soil sampling was done in accordance with ASTM: D 1586-84. Using this procedure, a 2" O.D. split barrel sampler is driven into the soil by a 140 lb weight falling 30". After an initial set of 6", the number of blows required to drive the sampler an additional 12" is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

5.2 Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief in accordance with ASTM: D 2487-83 and ASTM: D 2488. Representative portions of the samples were then returned to the laboratory for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are attached. Charts illustrating the soil classification procedure, the descriptive terminology and symbols used on the boring logs are also attached.

5.3 Monitoring Well Installation

Monitoring well construction and installation details are provided on the "Installation of Monitoring Well" data sheets, attached.

5.4 Volatile Analysis

The water samples were collected in 40 ml Teflon lined, septum sealed glass purge and trap vials.

The water samples were analyzed using a Tekmar LSC-2 liquid sample concentrator linked to a Perkin-Elmer 3920 Gas Chromatograph with FID. Benzene, xylene and toluene concentrations were identified by retention time and quantified by comparison with known standards. Gasoline concentration was determined by ratioing total peak area to a gasoline standard total peak area.

6.0 REMARKS

The information obtained from our study was arrived at in accordance with currently accepted engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by: Tod D. Christenson

Tod D. Christenson
Geochemist/Project Manager

Dated: January 8, 1986

This report was reviewed by: Jerry R. Rick

Jerry R. Rick, Manager
Environmental Department

Dated: January 6, 1986

Proofread by: P. Wright JR

APPENDIX A
SOIL BORING LOGS

LOG OF TEST BORING

JO 4231 86-44 VERTICAL SCALE 1" = 4' BORING NO 1

PROJECT INTERPLASTIC CORP., MINNEAPOLIS, MN.

DEPTH FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION ____)	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	OBSERVATIONS
5	CONCRETE						
	FILL, MIXTURE OF SAND AND SILTY SAND, a little gravel, a trace of ashes, brown, dark brown, grayish brown and a little black, frozen to 1'	FILL	23		1	SB	
			4		2	SB	
			2		3	SB	
7	SAND W/SILT, fine grained, brownish gray, moist, very loose, a few lenses of silt (SP-SM)	COARSE ALLUVIUM	4		4	SB	
9	SAND W/SILT AND A LITTLE GRAVEL, fine to medium grained, light brownish gray, moist, loose (SP-SM)		7		5	SB	
	SAND W/SILT AND GRAVEL, medium to fine grained, a few cobbles, grayish brown, moist, very dense (SP-SM)		34	▼	6	SB	
	SAND W/SILT AND A LITTLE GRAVEL, medium to coarse grained, a few cobbles dark gray, gray and some black, waterbearing, very dense (SP-SM)		44		7	SB	~17-18 feet. very strong chemical odors, visable in sample
			46		8	SB	
23	SAND W/SILT AND A LITTLE GRAVEL, fine to medium grained, dark brown, black and grayish brown, waterbearing, very dense (SP-SM)		49		9	SB	
	End of Boring Note: Monitoring Well installed in boring See attached "Installation of Monitoring Well" data sheet.						

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
2-9	12:05	18½'	17'	17½'	10	16.7'
-9	2:25	26'	25'	25'	10	17.0'

START 12-9-85 COMPLETE 12-9-85

METHOD HSA 0' - 25' @ 2:25

LOG OF TEST BORING

JOB 4231 86-44 VERTICAL SCALE 1" = 4' BORING NO 2

PROJECT INTERPLASTICS CORP., MINNEAPOLIS, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION ____)	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	OBSERVATIONS
	FILL, MIXTURE OF SILTY SAND AND CLAYEY SAND, a little concrete, gravel and cobbles, black and a little brown	FILL	8		1	SB	
3½	SAND W/A LITTLE GRAVEL, fine grained, light grayish brown, moist, loose to dense (SP)	COARSE ALLUVIUM	6		2	SB	
			16		3	SB	very strong chemical odors from 6 feet to completed depth
13½	SAND W/SILT AND GRAVEL, medium grained, a few cobbles, brown, dark brown and grayish brown, moist to 14½', then waterbearing, very dense (SP-SM)		38	▼	4	SB	
16½	SAND W/A LITTLE GRAVEL, medium grained, dark gray, black and gray, waterbearing, dense (SP)		27		5	SB	
18	SAND W/A LITTLE GRAVEL, fine to medium grained, gray, waterbearing, dense to loose (SP)		7		6	SB	
21	End of Boring						
	Note: Monitoring well installed in boring. See attached "Installation of Monitoring Well" sheet.						

WATER LEVEL MEASUREMENTS

START 12-6-85 COMPLETE 12-6-85

METHOD SA 0' - 21½' @ 2:25

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	FELL TO DEPTH	BAILED DEPTHS	WATER LEVEL
12-6	1:45	16½'	14½'	15'	10	14 7'
12-6	2:00	19'	17'	17'	10	14 6'

APPENDIX B

LOG OF TEST BORING

NO 4231 86-44 VERTICAL SCALE 1" = 4' BORING NO 3

JECT INTERPLASTICS CORP., MINNEAPOLIS, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION ____)	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	OBSERVATIONS
½	FILL, MIXTURE OF SILTY SAND AND GRAVEL, brown and black, frozen to ½'	FILL			1	HSA	
	FILL, MOSTLY SILTY SAND W/A LITTLE GRAVEL, black		9		2	SB	
			4		3	SB	
					4	SB	
	HEMIC PEAT, black, moist (PT)	SWAMP DEPOSITS					
	SAND W/SILT, fine grained, light grayish brown, moist, dense (SP-SM)	COARSE ALLUVIUM					6½ feet chemical odor present.
			20		5	SB	
14	SAND W/A LITTLE GRAVEL, fine to medium grained, light grayish brown, moist, dense (SP)		26		6	SB	
	SAND W/SILT, fine grained, grayish brown, waterbearing, dense, a layer of cobbles from about 16.7' to 18' (SP-SM)						17-18 feet strong chemical odor present
			24		7	SB	
	SAND W/SILT AND GRAVEL, medium to course grained, dark gray and grayishn brown, waterbearing, dense (SP-SM)						
			20		8	SB	
	End of Boring Note: Monitoring well installed in boring. See attached "Installation of Monitoring Well" sheet.						

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
					10	
2-10	9:45	21'	19½'	19'	10	17.0'
-10	10:15	24'	24'			17.3'

START 12-10-85 COMPLETE 12-10-85

METHOD HSA 0' - 25' @ 10:15

GENERAL NOTES

DRILLING AND SAMPLING SYMBOLS

SYMBOL	DEFINITION
HSA	3 1/4" I.D. Hollow Stem Auger
_FA	4", 6" or 10" Diameter Flight Auger
_HA	2", 4" or 6" Hand Auger
_DC	2 1/2", 4", 5" or 6" Steel Drive Casing
_RC	Size A, B, or N Rotary Casing
PD	Pipe Drill or Cleanout Tube
CS	Continuous Split Barrel Sampling
DM	Drilling Mud
JW	Jetting Water
SB	2" O.D. Split Barrel Sample
_L	2 1/2" or 3 1/2" O.D. SB Liner Sample
_T	2" or 3" Thin Walled Tube Sample
3TP	3" Thin Walled Tube (Pitcher Sampler)
_TO	2" or 3" Thin Walled Tube (Osterberg Sampler)
W	Wash Sample
B	Bag Sample
P	Test Pit Sample
_Q	BQ, NQ, or PQ Wireline System
_X	AX, BX, or NX Double Tube Barrel
CR	Core Recovery - Percent
NSR	No Sample Recovered, classification based on action of drilling equipment and/or material noted in drilling fluid or on sampling bit.
NMR	No Measurement Recorded, primarily due to presence of drilling or coring fluid.
▼	Water Level Symbol

TEST SYMBOLS

SYMBOL	DEFINITION
W	Water Content - % of Dry Wt. - ASTM D 2216
D	Dry Density - Pounds Per Cubic Foot
LL, PL	Liquid and Plastic Limit - ASTM D 4318

Additional Insertions in Last Column

Qu	Unconfined Comp. Strength-psf - ASTM D 2166
Pq	Penetrometer Reading - Tons/Square Foot
Ts	Torvane Reading - Tons/Square Foot
G	Specific Gravity - ASTM D 854
SL	Shrinkage Limits - ASTM D 427
OC	Organic Content - Combustion Method
SP	Swell Pressure - Tons/Square Foot
PS	Percent Swell
FS	Free Swell - Percent
pH	Hydrogen Ion Content, Meter Method
SC	Sulfate Content - Parts/Million, same as mg/L
CC	Chloride Content - Parts/Million, same as mg/L
C*	One Dimensional Consolidation - ASTM D 2435
Qc*	Triaxial Compression
D.S.*	Direct Shear - ASTM D 3080
K*	Coefficient of Permeability - cm/sec
D*	Dispersion Test
DH*	Double Hydrometer - ASTM D 4221
MA*	Particle Size Analysis - ASTM D 422
R	Laboratory Resistivity, in ohm - cm - ASTM G 57
E*	Pressuremeter Deformation Modulus - TSF
PM*	Pressuremeter Test
VS*	Field Vane Shear - ASTM D 2573
IR*	Infiltrometer Test - ASTM D 3385
RQD	Rock Quality Designation - Percent

* See attached data sheet or graph

WATER LEVEL

Water levels shown on the boring logs are the levels measured in the borings at the time and under the conditions indicated. In sand, the indicated levels may be considered reliable ground water levels. In clay soil, it may not be possible to determine the ground water level within the normal time required for test borings, except where lenses or layers of more pervious waterbearing soil are present. Even then, an extended period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed texture soils may not indicate the true level of the ground water table. Perched water refers to water above an impervious layer, thus impeded in reaching the water table. The available water level information is given at the bottom of the log sheet.

DESCRIPTIVE TERMINOLOGY

DENSITY TERM	"N" VALUE	CONSISTENCY TERM
Very Loose	0-4	Soft
Loose	5-8	Medium
Medium Dense	9-15	Rather Stiff
Dense	16-30	Stiff
Very Dense	Over 30	Very Stiff

Standard "N" Penetration: Blows Per Foot of a 140 Pound Hammer Falling 30 inches on a 2 inch OD Split Barrel Sampler

Lamination	Up to 1/2" thick stratum
Layer	1/2" to 6" thick stratum
Lens	1/2" to 6" discontinous stratum, pocket
Varved	Alternating laminations of clay, silt and /or fine grained sand, or colors thereof
Dry	Powdery, no noticeable water
Moist	Below saturation
Wet	Saturated, above liquid limit
Waterbearing	Pervious soil below water

RELATIVE GRAVEL PROPORTIONS

CONDITION	TERM	RANGE
Coarse Grained Soils	A little gravel	2 - 14%
	With gravel	15 - 49%
Fine Grained Soils		
15-29% + No. 200	A little gravel	2 - 7%
15-29% + No. 200	With gravel	8 - 29%
30% + No. 200	A little gravel	2 - 14%
30% + No. 200	With gravel	15 - 29%
30% + No. 200	Gravelly	15 - 49%

RELATIVE SIZES

Boulder	Over 12"
Cobble	3" - 12"
Gravel	
Coarse	3/4" - 3"
Fine	#4 - 3/4"
Sand	
Coarse	#4 - #10
Medium	#10 - #40
Fine	#40 - #200
Silt & Clay	- #200 Based on Plasticity

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
ASTM Designation: D 2487 - 83
(Based on Unified Soil Classification System)

			Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]	Soil Classification: Group Symbol	Soil Classification: Group Name[B]
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3^E$	GW	Well graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3^E$	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3^E$	SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3^E$	SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay[K,L,M,N] Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay[K,L,M,P] Organic silt[K,L,M,Q]
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat
Fibric Peat >67% Fibers		Hemic Peat 33%-67% Fibers		Sapric Peat <33% Fibers	

[A] Based on the material passing the 3-in. (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D] Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥30% plus no. 200, predominantly sand, add "sandy" to to group name.

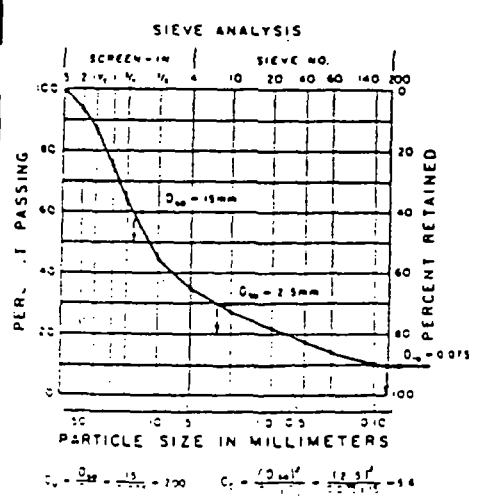
[M] If soil contains ≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

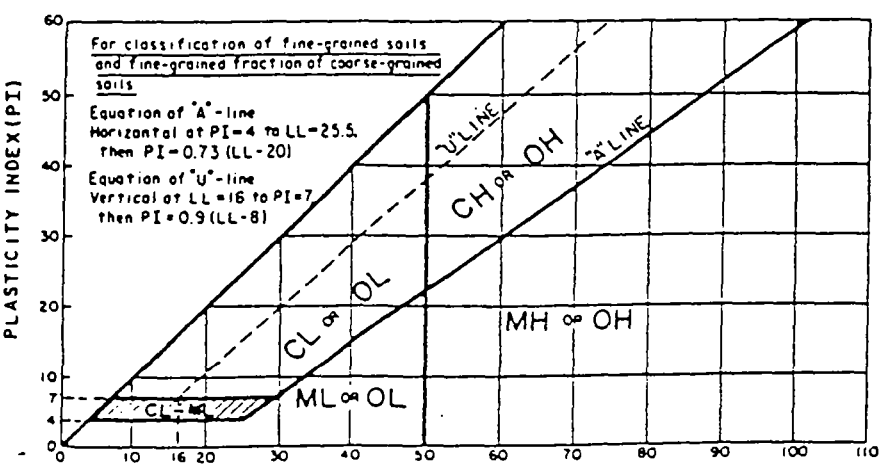
[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



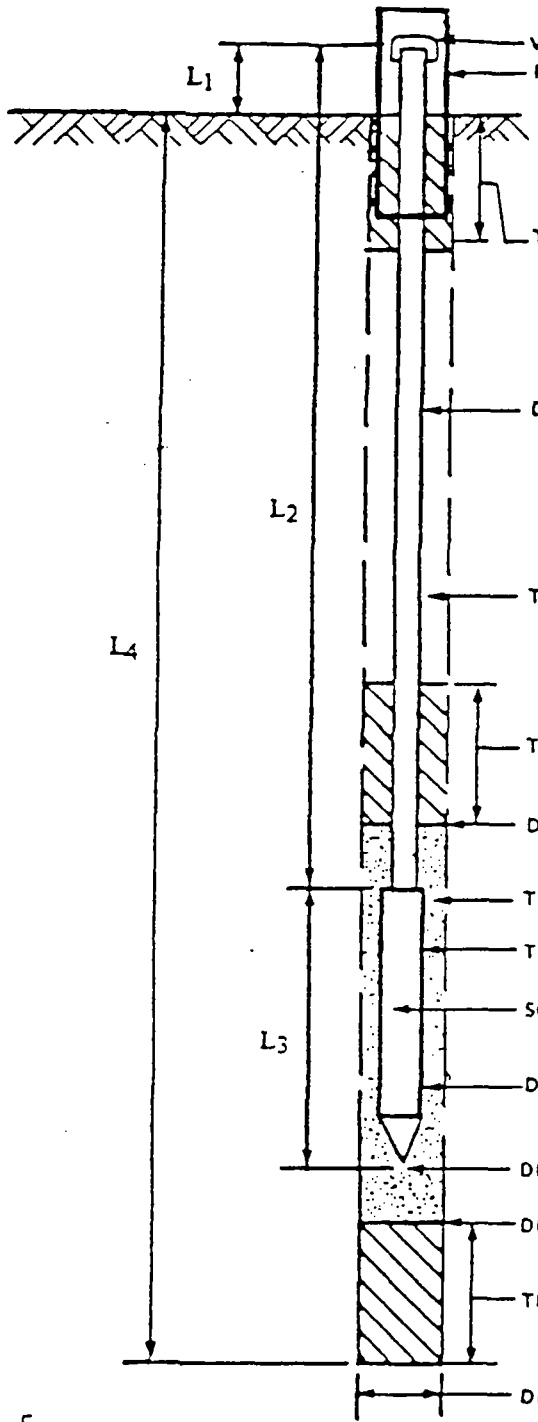


APPENDIX B
MONITORING WELL INSTALLATION SHEETS

INSTALLATION OF MONITORING WELL

JOB NO. 4231 86-44 MONITORING WELL NO. 1

GROUND SURFACE ELEVATION _____ TOP OF RISER PIPE ELEVATION _____
(with cap removed)



Diameter and Type	4" Steel
Total Length	5'
Length Above Ground	2.5'
THICKNESS AND TYPE OF SEAL	0' to 10½' Grout (Cement/Bentonite)
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized Steel
TYPE OF BACKFILL AROUND RISER	Grout
THICKNESS AND TYPE OF SEAL	10½' to 11½' Bentonite powder
DEPTH TO TOP OF FILTER SAND	11½'
TYPE OF FILTER AROUND SCREEN	Native Soil
TYPE OF MONITORING WELL	Stainless Steel
SCREEN GAUGE OR SIZE OF OPENINGS (SLOT NO.)	#10 Slot
DIAMETER AND LENGTH OF SCREEN	2" x 10'
DEPTH TO BOTTOM OF MONITORING WELL	24.5'
DEPTH TO BOTTOM OF FILTER SAND	26.0'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	7"

L1 = 2.5 FT

L2 = 17.0 FT

10.0 FT

L4 = 26.0 FT

INSTALLATION COMPLETED:
Date 12-9-85 Time 3:25

MONITORING WELL WATER LEVEL MEASUREMENTS

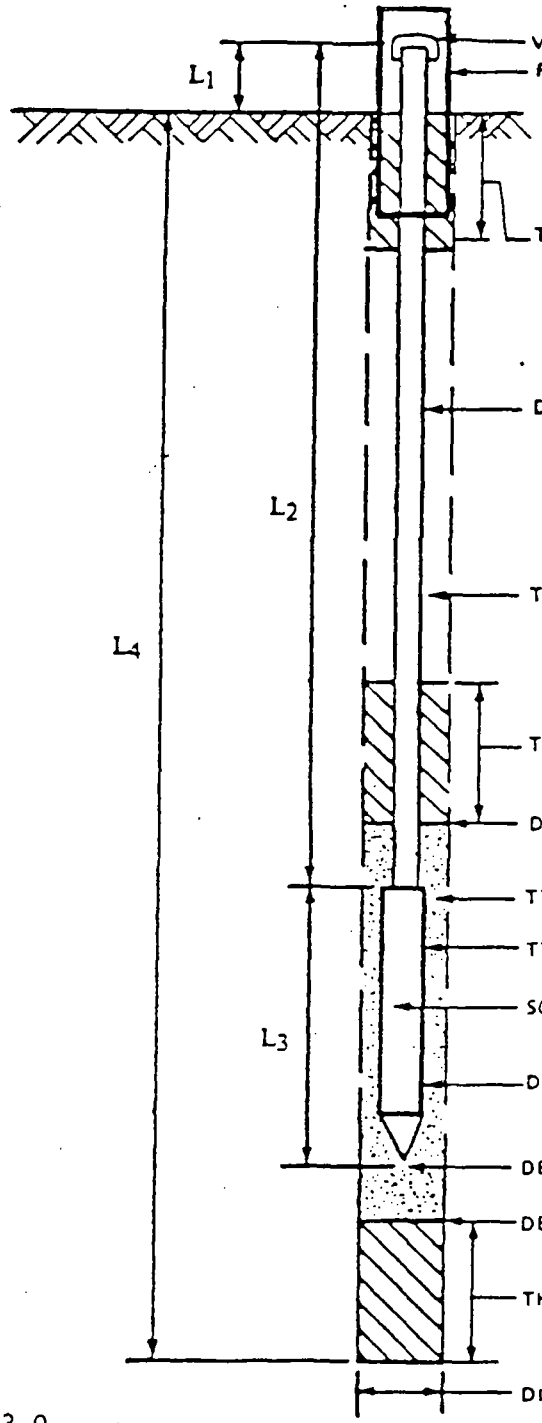
DATE	TIME	BAILED DEPTHS	WATER LEVEL *

(1) DEPTH BELOW TOP OF RISER PIPE

INSTALLATION OF MONITORING WELL

JOB NO. 4231 86-44 MONITORING WELL NO. 2

GROUND SURFACE ELEVATION _____ TOP OF RISER PIPE ELEVATION (with cap removed) _____



VENTED CAP	
PROTECTIVE CASING	
Diameter and Type	4" Steel
Total Length	5'
Length Above Ground	3.0'
THICKNESS AND TYPE OF SEAL	0' to 8' Grout (Cement/Bentonite)
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized Steel
TYPE OF BACKFILL AROUND RISER	Grout
THICKNESS AND TYPE OF SEAL	8' to 9' Bentonite Powder
DEPTH TO TOP OF FILTER SAND	9'
TYPE OF FILTER AROUND SCREEN	Native Soil
TYPE OF MONITORING WELL	Stainless Steel
SCREEN GAUGE OR SIZE OF OPENINGS (SLOT NO.)	#10 Slot
DIAMETER AND LENGTH OF SCREEN	2" x 10'
DEPTH TO BOTTOM OF MONITORING WELL	21.5'
DEPTH TO BOTTOM OF FILTER SAND	21.5'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	7"

L_1 = 3.0 FT

L_2 = 14.5 FT

10.0 FT

L_4 = 21.5 FT

INSTALLATION COMPLETED:
Date 12-6-85 Time 4:50

MONITORING WELL WATER LEVEL MEASUREMENTS

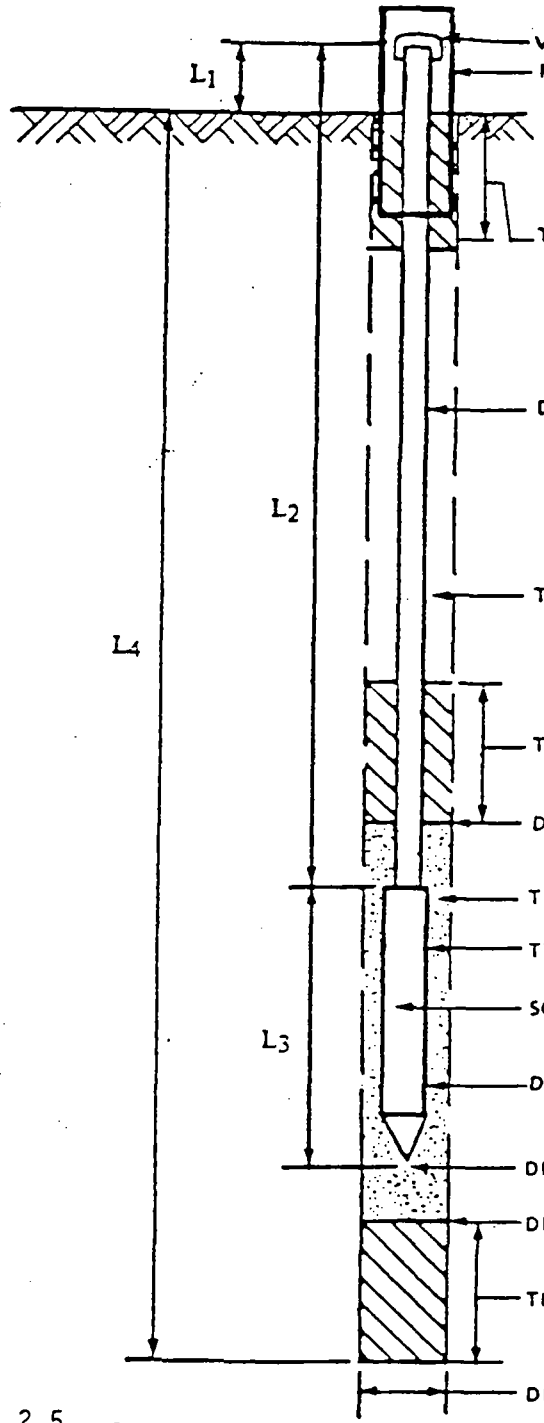
DATE	TIME	BAILED DEPTHS	WATER LEVEL *

(1) DEPTH BELOW TOP OF RISER PIPE

INSTALLATION OF MONITORING WELL

JOB NO. 4231 86-44 MONITORING WELL NO. 3

GROUND SURFACE ELEVATION _____ TOP OF RISER PIPE ELEVATION _____
(with cap removed)



VENTED CAP	
PROTECTIVE CASING	
Diameter and Type	4" Steel
Total Length	5'
Length Above Ground	2.5'
THICKNESS AND TYPE OF SEAL	0' to 10' Grout (Cement/Bentonite)
DIAMETER AND TYPE OF RISER PIPE	2" Galvanized Steel
TYPE OF BACKFILL AROUND RISER	Grout
THICKNESS AND TYPE OF SEAL	10' to 11' Bentonite powder
DEPTH TO TOP OF FILTER SAND	11'
TYPE OF FILTER AROUND SCREEN	Native Soil
TYPE OF MONITORING WELL	Stainless Steel
SCREEN GAUGE OR SIZE OF OPENINGS (SLOT NO.)	#10 Slot
DIAMETER AND LENGTH OF SCREEN	2" x 10'
DEPTH TO BOTTOM OF MONITORING WELL	25.0'
DEPTH TO BOTTOM OF FILTER SAND	26.0'
THICKNESS AND TYPE OF SEAL	None
DIAMETER OF BOREHOLE	7"

L1 = 2.5 FT

L2 = 17.5 FT

L3 = 10.0 FT

L4 = 26.0 FT

INSTALLATION COMPLETED:
Date 12-10-85 Time 11:15

MONITORING WELL WATER LEVEL MEASUREMENTS

DATE	TIME	BAILED DEPTHS	WATER LEVEL *

(1) DEPTH BELOW TOP OF RISER PIPE

GROUND WATER SAMPLING AND TESTING

FINAL REPORT

INTERPLASTICS CORPORATION

MINNEAPOLIS, MINNESOTA

#4231 86-363

OCTOBER 27, 1986

twin city testing
corporation

twin city testing
corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

October 28, 1986

Interplastics Corporation
2015 Broadway, N.E.
Minneapolis, Minnesota 55413

Attn: Mr. Bill Sofko

Subj: Ground Water Sampling and Testing
Final Report
Interplastics Corporation
P.O. #MP-31828
#4231 86-363

Dear Mr. Sofko:

Twin City Testing Corporation (TCT) has completed the ground water sampling and chemical analyses at the Interplastics Corporation site. We are transmitting five copies of our final report to you. The chemical analyses results were verbally transmitted to Mr. Matt Salchert on October 24, 1986.

We were verbally authorized by Mr. Salchert on September 25, 1986 to perform this work and we received your Purchase Order #MP-31828 on September 26, 1986.

The ground water samples will be retained until November 21, 1986 and then discarded unless other instructions are received.

We appreciate the opportunity to have been of service to you on this project. If you have any questions regarding information contained in our report, please contact me at 641-9359.

Very truly yours,

Twin City Testing Corporation

Gilbert Gabanski
Senior Project Manager/Hydrogeologist

GG/jr

Encs

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FINAL REPORT

INTERPLASTICS CORPORATION

MINNEAPOLIS, MINNESOTA

#4231 86-363

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this project was to collect ground water samples from four monitoring wells located at the Interplastics Corporation site in Minneapolis, Minnesota and to chemically analyze the ground water samples for acetone and styrene. Twin City Testing Corporation (TCT) was verbally authorized by Mr. Matt Salchert of Interplastics Corporation on September 25, 1986 to perform this work.

The scope of work we performed on this project consisted of the following items.

1. Mobilizing a two-person crew with sampling equipment to the site from our St. Paul, Minnesota office.
2. Measuring ground water levels in four existing monitoring wells.

3. Collecting representative ground water samples from four monitoring wells.

4. Surveying the riser pipe elevation and location of each of the four monitoring wells.

5. Chemically analyzing representative ground water samples for acetone and styrene.

6. Preparing a final report presenting all data, locations, results and methodologies based on the above information.

1.2 Site Location and Description

The site is located at 2015 Broadway Avenue, N.E. in Minneapolis, Minnesota as shown in Figure 1. The area is occupied by business and industrial structures, roads including Interstate I-35W, and railroad tracks. The site contains above and below ground storage tanks as shown in Figure 2. In addition, four existing monitoring wells are present in locations at the site as shown in Figure 2.

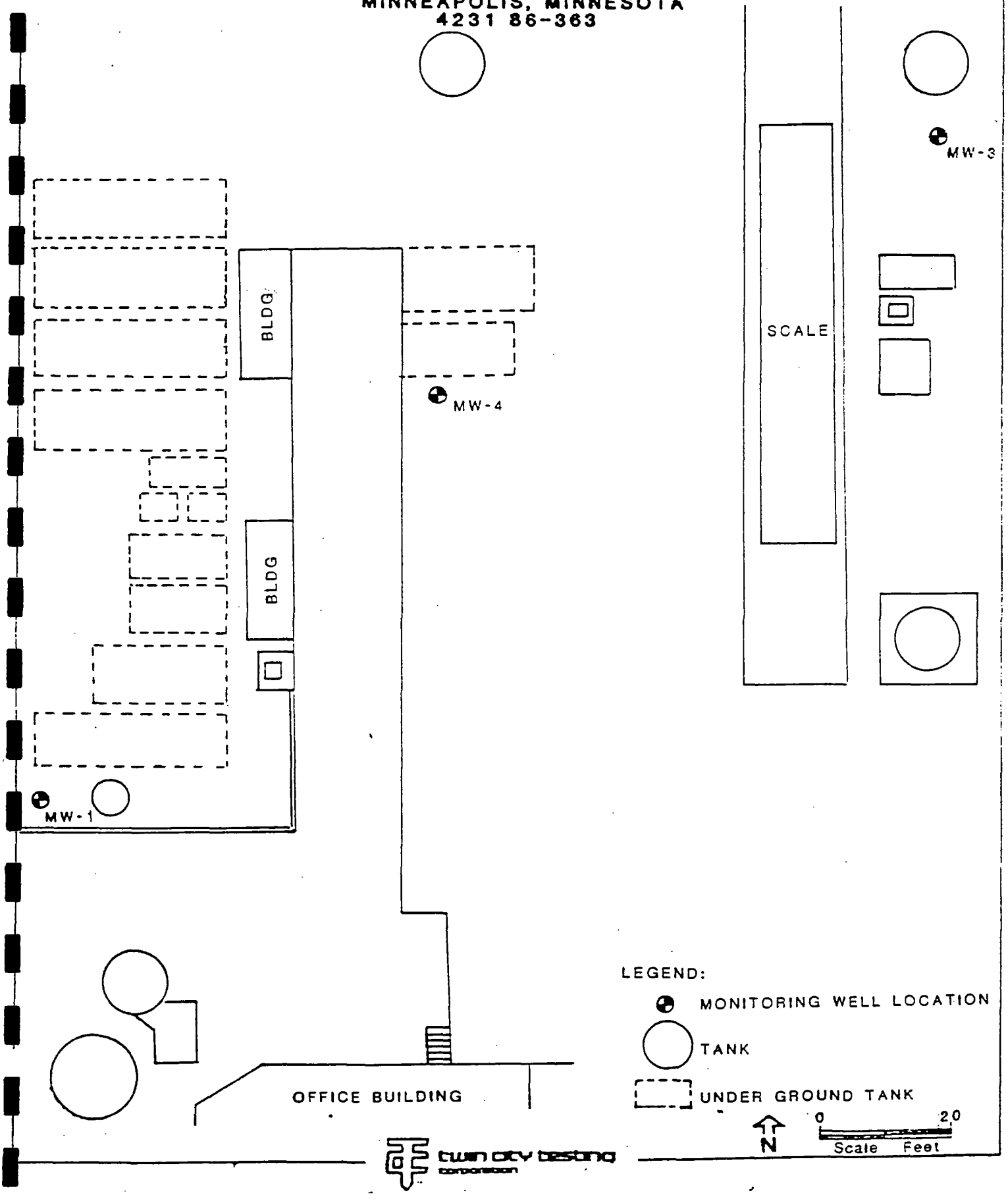
1.3 Previous Work

TCT has advanced three soil borings and installed three monitoring wells, MW-1, MW-2 and MW-3, one in each soil boring, at the site. The monitoring wells were developed, sampled, and ground water samples were analyzed for various chemical parameters including acetone and styrene. The results were reported to Interplastics Corporation on January 8, 1986 in TCT report #4231 86-44. The reader is referred to this report for information regarding soil conditions and monitoring well installation and specifications.

FIGURE 2

SITE MAP

INTERPLASTICS CORP.
MINNEAPOLIS, MINNESOTA
4231 86-363



TCT performed additional ground water sampling and chemical analyses for selected parameters on the three monitoring wells at the site. This work was performed on February 5, 1986 and reported to Hatcher, Inc. for Interplastics Corporation on February 21, 1986 in TCT report #4231 86-96. TCT performed chemical testing on ground water samples from monitoring well MW-4 for Hatcher, Inc. as reported in a supplemental report to Hatcher, Inc. on July 22, 1986.

Information regarding the construction of monitoring well MW-4 and results of other ground water sampling performed at this site was not available to TCT at the time this report was prepared.

2.0 PROJECT RESULTS

2.1 Monitoring Well Sampling

Representative ground water samples were collected from four monitoring wells, MW-1, MW-2, MW-3 and MW-4, at the site on September 26, 1986 using methods described in Section 5.0, Methods and Procedures, of this report. Monitoring well "Sampling Information" sheets for each monitoring well are presented in Appendix A.

2.2 Surveying

At the time monitoring well sampling was performed, no riser pipe elevation or location information for monitoring well MW-4 was available. In addition, an evaluation of previous reports indicated that the location of monitoring well MW-2 was incorrect. TCT re-surveyed the top of each riser pipe and location of all four monitoring wells. All locations were surveyed to the nearest 1.0' and the elevation for the top of the riser pipe of each monitoring well was surveyed to the nearest 0.01'. The elevation of the top of the riser pipe for each monitoring well is shown in Table 1.

2.3 Depth to Ground Water

Ground water levels were obtained in all four monitoring wells on September 26, 1986 using methods described in Section 5.0, Methods and Procedures, of this report. The results are shown in Table 1 which also includes the measured depth to ground water for monitoring wells MW-1, MW-2 and MW-3 taken on December 12, 1985 and February 5, 1986; and, for monitoring well MW-4 taken on May 3, 1986.

The depth to ground water from the top of the riser pipe for monitoring wells MW-1, MW-2 and MW-3 ranges from approximately 17' to 19' and for monitoring well MW-4 approximately 16'. The screens in monitoring wells MW-1, MW-2 and MW-3 intersect the water table; and, therefore were used to determine the slope of the water table.

TABLE 1

GROUND WATER ELEVATION
INTERPLASTICS CORPORATION
MINNEAPOLIS, MINNESOTA

Monitoring Well Number	Riser Pipe MSL Elevation (ft)	Depth to Ground Water (ft)	Ground Water MSL Elevation (ft)	Date
1	859.37	18.59	840.78	12-12-85
		19.08	840.29	02-05-86
		17.89	841.48	09-26-86
2	859.04	17.83	841.21	12-12-85
		18.29	840.75	02-05-86
		17.01	842.03	09-26-86
3	861.44	20.00	841.44	12-12-85
		20.53	840.91	02-05-86
		19.19	842.25	09-26-86
4	858.02	16.38	841.64	05-03-86
		15.90	842.12	09-26-86

MSL = Mean Sea Level

Because we do not have sufficient information regarding the construction of monitoring well MW-4, it is not known if the ground water elevation is a reflection of the water table or a piezometric surface.

The water table elevation, as measured in monitoring wells MW-1, MW-2 and MW-3, has risen approximately 1.2' to 1.3' from February 5, 1986 to September 26, 1986.

2.4 Ground Water Flow Direction

The slope of the water table, as determined from ground water elevations in monitoring wells MW-1, MW-2 and MW-3, is to the southeast, as shown in Figure 3.

2.5 Ground Water Chemistry

Ground water samples from monitoring wells MW-1 through MW-4 were analyzed for acetone and styrene. The results are presented in Table 2 which also includes results from analyses performed on samples collected on December 12, 1985 as reported in TCT report #4231 86-44. All chemistry results and methodologies are presented in Section 5.0, Methods and Procedures and in Appendix B. Acetone was detected in monitoring wells MW-1, MW-2, MW-3 and MW-4, at levels of 340 parts per million (ppm), 450 ppm, 430 ppm and 160 ppm, respectively. Styrene was detected in monitoring wells MW-1 and MW-2

FIGURE 3
GROUND WATER ELEVATION MAP
INTERPLASTICS CORP.
MINNEAPOLIS, MINNESOTA
4231 86-363

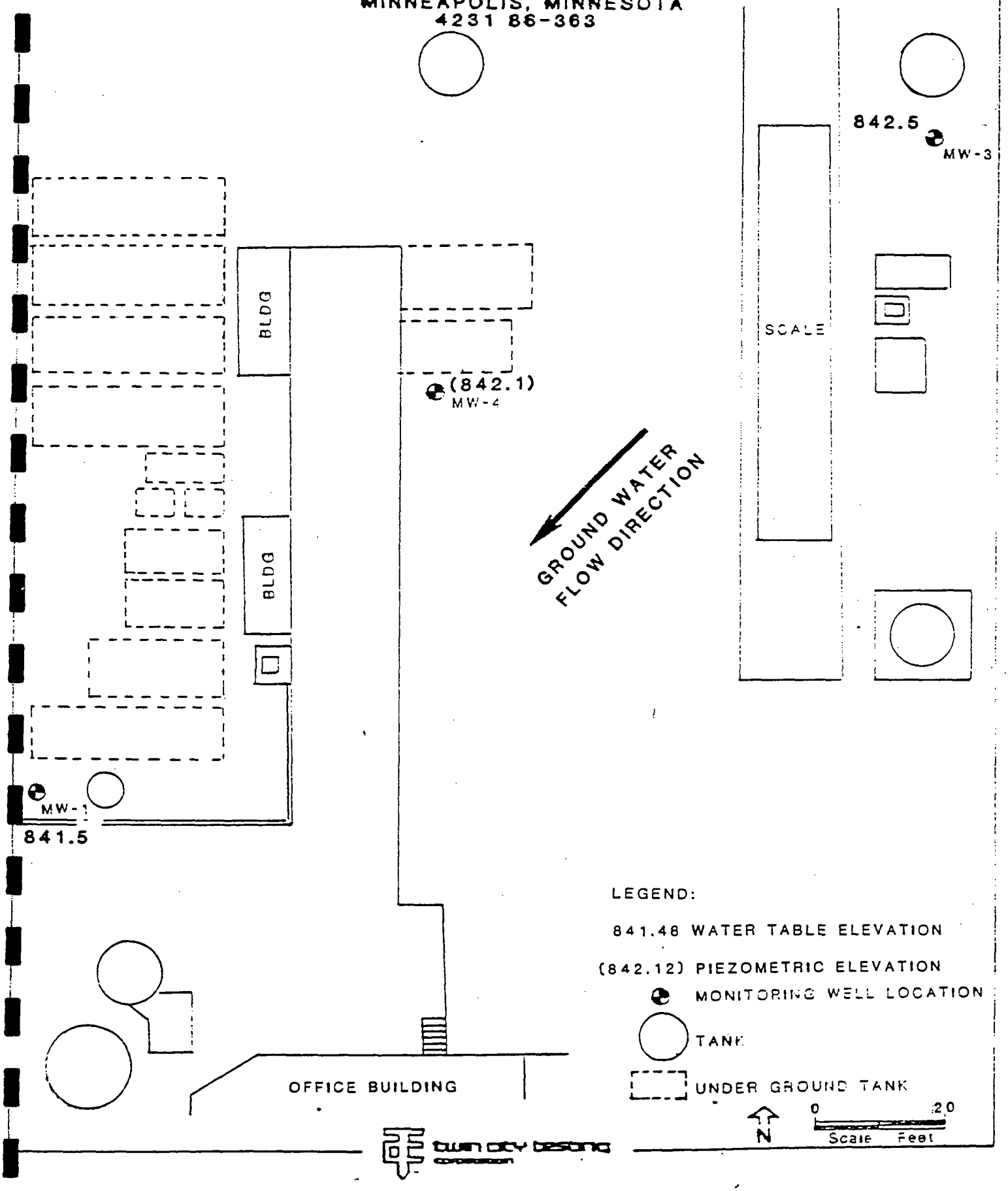


TABLE 2

ANALYTICAL RESULTS
INTERPLASTICS CORPORATION
MINNEAPOLIS, MINNESOTA

Well Number	Acetone (mg/L)	Styrene (mg/L)	Date*
1	4**	300	12-12-85
	340	40	09-26-86
2	340**	ND	12-12-85
	450**	ND	09-26-86
3	ND**	180	12-12-85
	430**	40	09-26-86
4	160	ND	09-26-86
LDL	2.0	5.0	12-12-85
LDL	1.0	1.0	09-26-86

*Date samples collected.
**Several unidentified peaks present in sample.
ND = Not Detected.
LDL = Lower Detectable Limit.
mg/L = Parts per million (ppm).

at levels of 40 ppm and 40 ppm, respectively. Styrene was not detected at or above the lower detection limit of 1.0 ppm in monitoring wells MW-2 and MW-4.

3.0 DISCUSSION OF RESULTS

The Minnesota Department of Health (MDH) Recommended Allowable Limit (RAL) for styrene is 0.14 ppm. Styrene levels in monitoring wells MW-1 and MW-3 exceeded the MDH RAL for styrene. Because the lower detectable limit (LDL) for styrene is 1.0 ppm, it is not known if styrene levels in monitoring wells MW-2 and MW-4 also exceed the MDH RAL for styrene. We are not aware of any Federal or State standard for acetone. — RAL 700 ug/l = .7 ppm

The water table underlying the Interplastic Corporation site has risen approximately 1.2' to 1.3' in elevation during the last 7 months. This is probably the result of higher recharge rates resulting from excessive rainfall which has occurred during this time. The additional recharge infiltrating through the unsaturated zone has probably leached higher amounts of acetone down towards the water table. This possibly explains the increase in detected levels of acetone in monitoring wells MW-1, MW-2 and MW-3. Styrene is not soluble in water and possibly is not influenced by the additional recharge infiltrating through the unsaturated soils. It is our undersanding that the entire site is to be paved over with cement which will reduce surface infiltration at the site. This should result in a future reduction of detected levels of acetone in ground water underlying the site.

4.0 RECOMMENDATIONS

Additional ground water sampling and analyses are recommended. In addition, at least one ground water sample should be analyzed by using gas chromatography/mass spectrometry methods for the purpose of confirming the identification of acetone and styrene.

5.0 METHODS AND PROCEDURES

5.1 Monitoring Well Sampling

Ground water samples were collected by first stabilizing the monitoring well and then collecting the actual ground water sample. The monitoring well stabilization process consisted of evacuating the well by using a 1.75" O.D. submersible pump. A minimum of three well water-column volumes was evacuated prior to sample collection. A water-column volume was determined by measuring the length of the column of water present in the well and calculating the volume of that column of water. The ground water was monitored for pH, specific conductance and temperature during the stabilization process. All information collected during the stabilization process was recorded on the "Sampling Information" forms presented in Appendix A.

The ground water samples were collected by using a 1.75" O.D. Teflon bailer with a bottom closing ball check valve. Each well had a bailer dedicated to it and each bailer was laboratory cleaned using an acid washed followed by deionized distilled water rinses and oven dried at 105°C. The bailers were wrapped in aluminum foil, shiny side out, for transport to the field. Each bailer had a length of nylon rope dedicated to it.

The ground water samples were collected in 40 ml glass containers with Teflon septa seals. All glass containers were acid washed followed by deionized distilled water rinses and oven dried at 105°C for 1 hour. A bailer blank and a laboratory blank were also provided. The sample bottles were appropriately labeled with the work order number, location number and initials of the person sampling. A Chain of Custody form was completed.

The Chain of Custody record was shipped with the samples to the laboratory. Upon arrival at the laboratory, the samples were checked in and signed over to the appropriate laboratory personnel. A copy of the Chain of Custody form was turned over to the Project Manager.

5.2 Ground Water Measurements

All ground water level measurements were obtained by using an electronic measuring device which indicates when a probe is in contact with the ground water in the well. Measurements were obtained by lowering the device into

the well until it was indicated that the water surface had been encountered and by measuring the distance from the top of the riser pipe to the probe. All the measurements were recorded to the nearest 0.01'; however, the manufacturer's reported accuracy for the instrument is 0.04'.

5.3 Laboratory Analyses

The ground water samples were analyzed by direct injection using a Perkin-Elmer Sigma 2B gas chromatograph equipped with a flame ionization detector. Compounds were identified by column retention time and quantified by peak area comparison with known standards using a VG Analytical Data System.

6.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by: Gilbert Gabanski

Gilbert Gabanski
Senior Project Manager/Hydrogeologist

Dated: October 28 1986

This report was reviewed by: Jane M. Willard

Jane M. Willard, M.S., CPGS
Senior Project Manager/Hydrogeologist

Dated: October 28 1986

Proofread by: P. Wright

APPENDIX A
SAMPLING INFORMATION SHEETS

SAMPLING INFORMATION

Sampling Point MW-1 Project Interplastics
Location Interplastics, 2015 Broadway, Mpls., MN W.O.# 4231 86-363

Sample ID # 09261340-1 Date Sampled 9/26/86 Time 1:40 AM/PM
Describe Sampling Point 2" monitoring well, southwest corner of site.

Well Depth 24.5 ft. below MP Casing Diameter 2 inches
Depth to Water (below MP) 17.89 ft. Date 9/26/86 Time 11:09 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at _____ ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: _____ Odor: _____
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: Volatiles - styrene and acetone.

EVACUATION/STABALIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
12:55	7.08	1570	18.0		2.5	
1:08	7.18	1570	17.5		4.0	
1:20	7.18	1550	18.0		6.0	
1:40	7.15	1560	18.0		8.0	

Pumping start time _____ WL _____
Pumping stop time _____ WL _____

Comments: Rainbows.

Form completed by: R. Whitaker Witnessed by: L. Grigor

twin city testing

SAMPLING INFORMATION

Sampling Point MW-2 Project Interplastics
Location Interplastics, Mpls., MN W.O.# 4231 86-363

Sample ID # 09261440-2 Date Sampled 9/ 26/ 86 Time 2:40 AM/PM
Describe Sampling Point 2" monitoring well, northwest corner of property.

Well Depth 21.5 ft. below MP Casing Diameter 2 inches
Depth to Water (below MP) 17.01 ft. Date 9 / 26 / 86 Time 11:05 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at _____ ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: _____ Odor: _____
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: See MW-1.

EVACUATION/STABALIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
1:50	6.73	4,000	18.5		1.5	
2:05	6.83	3,400	18.0		3.0	
2:20	6.76	3,400	18.0		4.0	
2:30	6.83	3,400	18.0		5.5	

Pumping start time 1:45 WL _____
Pumping stop time _____ WL _____

Comments: _____

Form completed by: R. Whitaker Witnessed by: L. Grigor

SAMPLING INFORMATION

Sampling Point MW-3 Project Interplastics
Location Interplastics, 2015 Broadway, Mpls., MN W.O.# 4231 86-363

Sample ID # 09261150-3 Date Sampled 9/ 26/ 86 Time 11:50 (AM)/PM
Describe Sampling Point Monitoring well, northeast corner of property.

Well Depth 25.0 ft. below MP Casing Diameter 2 inches
Depth to Water (below MP) 19.19 ft. Date 9/ 26 / 86 Time 11:00 (AM)/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at _____ ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: Cloudy Odor: _____
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: See MW-1

EVACUATION/STABALIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
11:20	6.80	1570	19.0		1	
11:25	6.80	1600	18.0		2	
11:30	6.82	1600	18.0		3	
11:35	6.82	1600	17.0		4	
11:40	6.84	1600	17.0		5	
11:45	6.83	1600	17.0		6	

Pumping start time 11:17 WL _____
Pumping stop time 11:45 WL _____

Comments: Six gallons bailed.

Form completed by: L. Grigor Witnessed by: R. Whitaker

SAMPLING INFORMATION

Sampling Point MW-4 Project Interplastics
Location Interplastics, Mpls., MN W.O.# 4231 86-363
Sample ID # MW-4 Date Sampled 9 / 26 / 86 Time 3:00 AM/PM
Describe Sampling Point _____

Well Depth 40 ft. below MP Casing Diameter 6 inches
Depth to Water (below MP) 15.90 ft. Date 9 / 26 /86 Time 11:12 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least _____ bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at _____ ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: _____ Odor: _____
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: See MW-1.

EVACUATION/STABALIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
12:24	7.12	1890	22.0		16 gal.	
12:44	7.09	1900	17.5		24	
1:02	7.07	1790	17.0		42	
1:20	7.10	1770	16.0		56	
2:36	7.30	1550	18.0		59	
2:46	7.24	1660	18.0		62	
2:57	7.15	1770	18.0			

Pumping start time 11:59 WL _____
Pumping stop time _____ WL _____

Comments: Pump stopped at 1:30. Well stabilized with pump and bailer.

Form completed by: R. Whitaker Witnessed by: L. Grigor

APPENDIX B

CHEMICAL RESULTS AND METHODOLOGY

twin city testing
corporation
662 CROMWELL AVENUE
ST PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSIS

PROJECT: INTER PLASTICS

Date: October 21, 1986

REPORTED TO: Twin City Testing
Attn: Gil Gabanski
662 Cromwell Ave
St Paul, Minn 55114

LABORATORY No. 4400 86-3410

INTRODUCTION:

This report presents the results of our analysis of samples received by this laboratory on September 26, 1986 from Robin Whitaker of Twin City Testing. The scope of our work was limited to analyzing the samples for the presence of styrene and acetone using gas chromatographic techniques.

SAMPLE IDENTIFICATION:

TCT# 23181 - 82 MW 1
TCT# 23183 - 84 MW 2
TCT# 23185 - 86 MW 3
TCT# 23187 - 88 MW 4
TCT# 23189 - 90 Bailer Blank
TCT# 23191 - Trip Blank

METHODOLOGY:

The samples were analyzed by direct injection using a Perkin-Elmer Sigma 2B gas chromatograph equipped with a flame ionization detector. Compounds were identified by column retention time and quantified by peak area comparison with known standards using a VG Analytical data system.

RESULTS:

These are summarized in Table #1.

REMARKS:

The samples will be held for thirty days from the date of this report, then discarded unless other arrangements are made.

TWIN CITY TESTING
CORPORATION

Chris Bremer
Asst. Laboratory
Supervisor

Harold D Fisher
Chromatography
Group Leader

twin city testing
corporation
662 CROMWELL AVENUE
ST PAUL. MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSIS

PROJECT: INTER PLACTICS

Date: October 21, 1986

REPORTED TO:

LABORATORY No. 4400 86-3410

TABLE #1

Sample Identification	Acetone (mg/L)	Styrene (mg/L)
TCT# 23181 - MW 1	340	40
TCT# 23183 - MW 2	450	ND **
TCT# 23185 - MW 3	430	40 **
TCT# 23187 - MW 4	160	ND
TCT# 23190 - Bailer Blank	ND	ND
Lower Detectable Limit	1.0	1.0

** Unidentified peak present in sample

ND = Not detected

GROUND WATER SAMPLING AND TESTING

INTERPLASTIC CORPORATION

P.O. #MP-32661

#4231 86-363

DECEMBER 22, 1986

twin city testing
corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

December 22, 1986

Interplastic Corporation
2015 Broadway, N.E.
Minneapolis, Minnesota 55413

Attn: Mr. Robert Hoffman

Subj: Ground Water Sampling and Testing
Interplastic Corporation
P.O. #MP-32661
#4231 86-363

Dear Mr. Hoffman:

Twin City Testing Corporation (TCT) has completed the ground water sampling and chemical analyses at the Interplastic Corporation site in Minneapolis, Minnesota. We are transmitting five copies of our final report to you. The chemical analyses results were verbally transmitted for you on November 13, 1986.

We were verbally authorized by you and we received your Purchase Order #MP-32661 on November 5, 1986 to perform this work.

The ground water samples will be retained until January 30, 1987 and then discarded unless other instructions are received.

We appreciate the opportunity to have been of service to you on this project. If you have any questions regarding information contained in our report, please contact me at 641-9359.

Very truly yours,

Twin City Testing Corporation

Gil Gabanski
Senior Project Manager/Hydrogeologist

GG/jr

Encs.

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INTERPLASTIC CORPORATION

P.O. #MP-32661

#4231 86-363

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this project was to collect ground water samples from four monitoring wells located at the Interplastic Corporation site in Minneapolis, Minnesota and to chemically analyze the ground water samples for acetone and styrene. Twin City Testing Corporation (TCT) was verbally authorized by Mr. Robert Hoffman of Interplastic Corporation on November 5, 1986 to perform this work.

The scope of work we performed on this project consisted of the following items.

1. Mobilizing a two-person crew with sampling equipment to the site from our St. Paul, Minnesota office.
2. Measuring ground water levels in four existing monitoring wells.
3. Collecting representative ground water samples from four monitoring wells.

4. Collecting duplicate samples and forwarding them to another laboratory as requested by Interplastic Corporation.

5. Chemically analyzing representative ground water samples for acetone and styrene.

6. Preparing a final report presenting all data, locations, results and methodologies based on the above information.

1.2 Site Location and Description

The site is located at 2015 Broadway Avenue, N.E. in Minneapolis, Minnesota as shown in Figure 1. The area is occupied by business and industrial structures, roads including Interstate I-35W, and railroad tracks. The site contains above and below ground storage tanks as shown in Figure 2. In addition, four monitoring wells are present in locations at the site as shown in Figure 2.

1.3 Previous Work

TCT has advanced three soil borings and installed three monitoring wells, MW-1, MW-2 and MW-3, one in each soil boring, at the site. The monitoring wells were developed, sampled, and ground water samples were analyzed for various chemical parameters including acetone and styrene. The results were reported to Interplastic Corporation on January 8, 1986 in TCT report #4231 86-44. The reader is referred to this report for information regarding soil conditions and monitoring well installation and specifications.

FIGURE 1

SITE LOCATION MAP

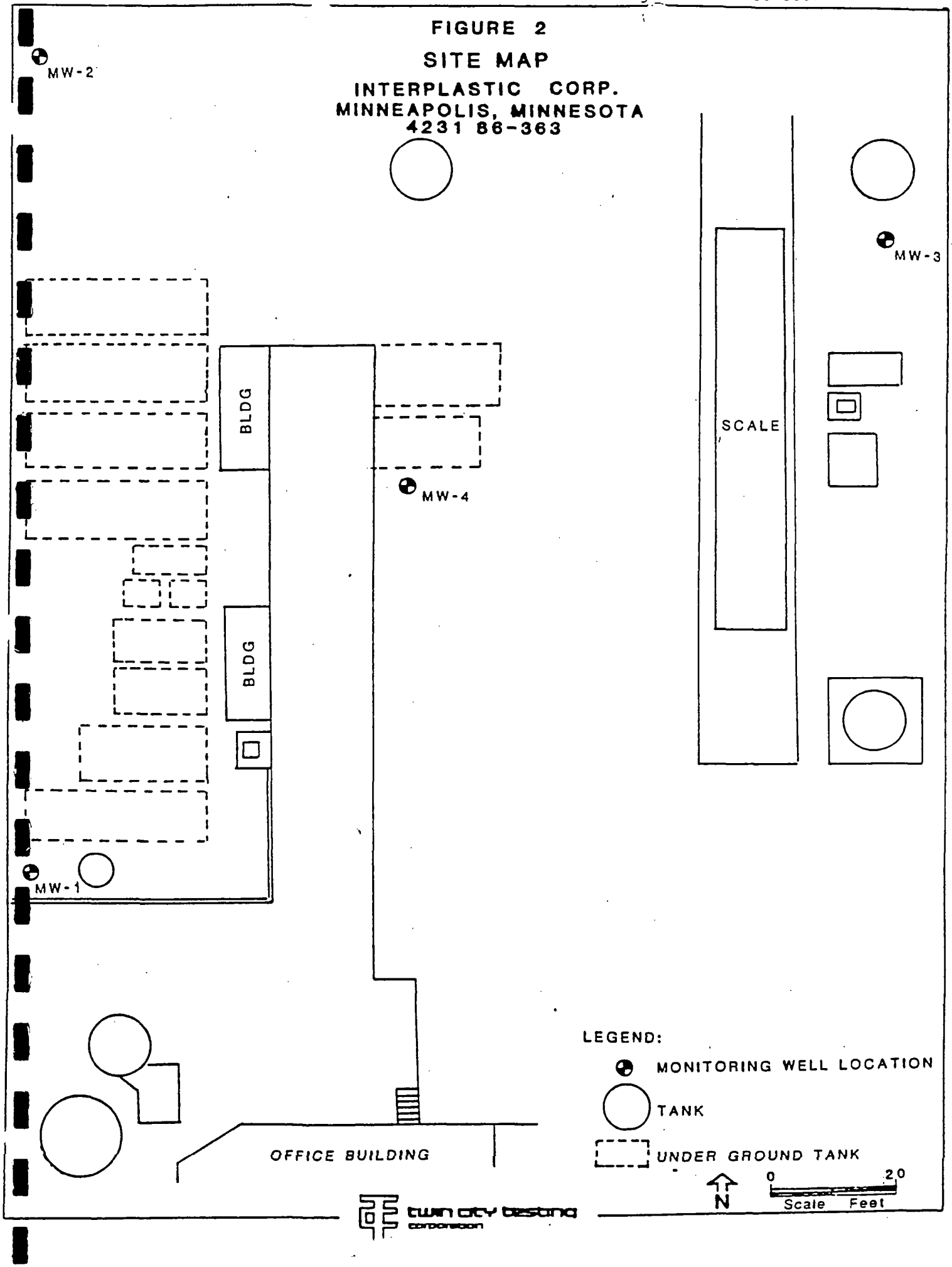
INTERPLASTIC
MINNEAPOLIS, MINNESOTA
4231 86-363

twin city testing corporation

FIGURE 2

SITE MAP

INTERPLASTIC CORP.
MINNEAPOLIS, MINNESOTA
4231 86-363



TCT performed additional ground water sampling and chemical analyses for selected parameters on three monitoring wells at the site. This work was performed on February 5, 1986 and reported to Hatcher, Inc. for Interplastic Corporation on February 21, 1986 in TCT report #4231 86-95. TCT performed chemical testing on ground water samples from monitoring well MW-4 for Hatcher, Inc. as reported in a supplemental report to Hatcher, Inc. on July 22, 1986.

TCT performed ground water sampling and chemical analyses for acetone and styrene on the four monitoring wells at the site. The results of the analyses and a discussion of the data were reported to Interplastic Corporation in TCT report #4231 86-363 dated October 27, 1986.

Information regarding the construction of monitoring well MW-4 and results of other ground water sampling performed at this site were not available to TCT at the time this report was prepared.

2.0 PROJECT RESULTS

2.1 Monitoring Well Sampling

Representative ground water samples were collected from four monitoring wells, MW-1, MW-2, MW-3 and MW-4, at the site on November 6, 1986 using methods described in Section 5.0, Methods and Procedures, of this report.

Monitoring well "Sampling Information" sheets for each monitoring well are presented in Appendix A.

2.2 Depth to Ground Water

Ground water levels were obtained in all four monitoring wells on November 6, 1986 using methods described in Section 5.0, Methods and Procedures, of this report. The results are shown in Table 1 which also includes measured depth to ground water for the monitoring wells taken on December 12, 1985, February 5, 1986, May 3, 1986, and September 26, 1986.

The depth to ground water from the top of the riser pipe for monitoring wells MW-1, MW-2 and MW-3 ranges from approximately 17' to 20' and for monitoring well MW-4 approximately 16'. The screens in monitoring wells MW-1, MW-2 and MW-3 intersect the water table and, therefore, were used to determine the slope of the water table.

Because we do not have sufficient information regarding the construction of monitoring well MW-4, it is not known if the ground water elevation is a reflection of the water table or a piezometric surface.

The water table elevation, as measured in monitoring wells MW-1, MW-2 and MW-3, has fallen approximately 0.4' to 0.5' from September 26, 1986 to November 6, 1986.

TABLE 1

GROUND WATER ELEVATION
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA
#4231 86-363

Monitoring Well Number	Riser Pipe MSL Elevation (ft)	Depth to Ground Water (ft)	Ground Water MSL Elevation (ft)	Date
MW-1	859.37	18.59	840.78	12-12-85
		19.08	840.29	02-05-86
		17.89	841.48	09-26-86
		18.34	841.03	11-06-86
MW-2	859.04	17.83	841.21	12-12-85
		18.29	840.75	02-05-86
		17.01	842.03	09-26-86
		17.43	841.61	11-06-86
MW-3	861.44	20.00	841.44	12-12-85
		20.53	840.91	02-05-86
		19.19	842.25	09-26-86
		19.71	841.73	11-06-86
MW-4	858.02	16.38	841.64	05-03-86
		15.90	842.12	09-26-86
		16.40	841.62	11-06-86

MSL = Mean Sea Level

2.3 Ground Water Flow Direction

The slope of the water table, as determined from ground water elevations in monitoring wells MW-1, MW-2 and MW-3, is to the south-southwest, as shown in Figure 3.

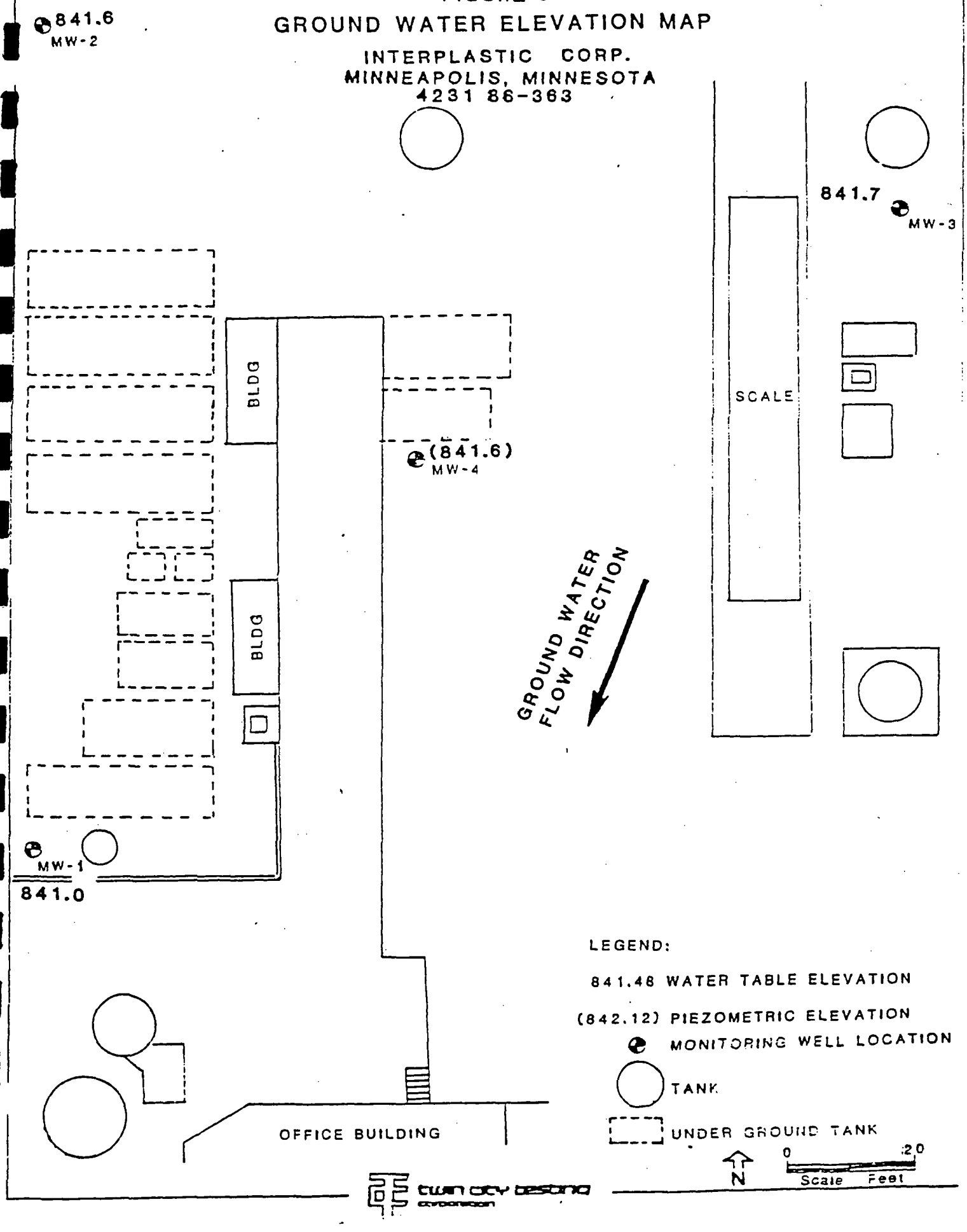
2.4 Ground Water Chemistry

Ground water samples from monitoring wells MW-1 through MW-4 were analyzed for acetone and styrene. The results are presented in Table 2. All chemistry results and methodologies are presented in Section 5.0, Methods and Procedures and in Appendix B, of this report. Acetone was detected in monitoring well MW-2 at a level of 28 parts per million (ppm). Styrene was detected in monitoring well MW-1 at a level of 22 ppm. Styrene was not detected at or above the lower detection limit of 1.0 ppm in monitoring wells MW-2, MW-3 and MW-4. Acetone was not detected at or above the lower detection limit of 1.0 ppm in samples from monitoring wells MW-1, MW-3 and MW-4.

Ground water samepls from all four monitoring wells were analyzed by Gas Chromatographic (GC) methods and the identification of acetone and styrene were verified by using GC methods with a chromatographic column of different polarity.

FIGURE 3
GROUND WATER ELEVATION MAP

INTERPLASTIC CORP.
MINNEAPOLIS, MINNESOTA
4231 86-363



twin city testing

TABLE 2

ANALYTICAL RESULTS
INTERPLASTIC CORPORATION
MINNEAPOLIS, MINNESOTA
#4231 86-363

Monitoring Well Number	(mg/L) Acetone #1	(mg/L) Acetone #2	(mg/L) Styrene #1	(mg/L) Styrene #2
MW-1	ND	ND	22	P
MW-2	28	P	ND	ND
MW-3	ND	ND	ND	ND
MW-4	ND	ND	ND	ND

ND = Not Detected, lower detectable limit is 1 mg/L

P = Present, not quantified

NA = Not Analyzed

mg/L is equivalent to parts per million (ppm)

Note: Acetone #2 and Styrene #2 are duplicate samples that were analyzed by a GC method with a chromatographic column of different polarity than the column used for analysis of samples Acetone #1 and Styrene #1.

3.0 DISCUSSION OF RESULTS

The Minnesota Department of Health (MDH) Recommended Allowable Limit (RAL) for styrene is 0.14 ppm. The styrene in monitoring well MW-1 exceeded the MDH RAL for styrene. Because the lower detectable limit (LDL) for styrene is 1.0 ppm, it is not known if styrene levels in monitoring wells MW-2, MW-3 and MW-4 also exceed the MDH RAL for styrene. We are not aware of any Federal or State standard for acetone.

The water table underlying the Interplastic Corporation site has fallen approximately 0.4' to 0.5' in elevation during the last 2 months. This is probably the result of lower recharge rates resulting when the site was paved over with concrete during this time. The reduced recharge infiltrating through the unsaturated zone has probably decreased the amounts of acetone infiltrating down towards the water table. This possibly explains the decrease in detected levels of acetone in all four monitoring wells. Styrene has continued to decrease in monitoring well MW-1 and was not detected at or above the LDL of 1.0 ppm in monitoring wells MW-2, MW-3 and MW-4.

4.0 RECOMMENDATIONS

Ground water samples should be collected and analyzed for styrene and acetone again in May, 1987.

5.0 METHODS AND PROCEDURES

5.1 Monitoring Well Sampling

Ground water samples were collected by first stabilizing the monitoring well and then collecting the actual ground water sample. The monitoring well stabilization process consisted of evacuating the well by using a 1.75" O.D. submersible pump on MW-4 and a 1.75" O.D. Teflon bailer on MW-1, MW-2, and MW-3. A minimum of three well water-column volumes were evacuated prior to sample collection. A water-column volume was determined by measuring the length of the column of water present in the well and calculating the volume of that column of water. The ground water was monitored for pH, specific conductance and temperature during the stabilization process. All information collected during the stabilization process was recorded on the "Sampling Information" forms presented in Appendix A.

The ground water samples were collected by using a 1.75" O.D. Teflon bailer with a bottom closing ball check valve. Each well had a bailer dedicated to it and each bailer was laboratory cleaned using an acid washed followed by deionized distilled water rinses and oven dried at 105OC. The bailers were wrapped in aluminum foil, shiny side out, for transport to the field. Each bailer had a length of nylon rope dedicated to it.

The ground water samples were collected in 40 ml glass containers with Teflon septa seals. All glass containers were acid washed followed by

deionized distilled water rinses and oven dried at 105°C for 1 hour. A bailer blank and a laboratory blank were also provided. The sample bottles were appropriately labeled with the work order number, location number and initials of the person sampling. A Chain of Custody form was completed.

The Chain of Custody record was shipped with the samples to the laboratory. Upon arrival at the laboratory, the samples were checked in and signed over to the appropriate laboratory personnel. A copy of the Chain of Custody form was turned over to the Project Manager.

5.2 Ground Water Level Measurements

All ground water level measurements were obtained by using an electronic measuring device which indicates when a probe is in contact with the ground water in the well. Measurements were obtained by lowering the device into the well until it was indicated that the water surface had been encountered and by measuring the distance from the top of the riser pipe to the probe. All the measurements were recorded to the nearest 0.01'; however, the manufacturer's reported accuracy for the instrument is 0.04'.

5.3 Laboratory Analyses

The ground water samples were analyzed by direct injection using a Perkin-Elmer Sigma 2B gas chromatograph equipped with a flame ionization detector. Compounds were identified by column retention time and quantified by peak area comparison with known standards using a VG Analytical Data System.

6.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:

Lynne J. Grigor
Geologist

Gilbert Gabanski
Senior Project Manager/Hydrogeologist

Dated: December 22, 1986

This report was reviewed by:

Jane M. Willard, M.S., CPGS
Senior Project Manager/Hydrogeologist

Dated: December 22, 1986

Proofread by: TWM

APPENDIX A

SAMPLING INFORMATION SHEETS

SAMPLING INFORMATION

Sampling Point MW-1 Project Interplastic
Location Minneapolis, Minnesota W.O.# 4231 86-363

Sample ID # 11061400 Date Sampled 11 / 6 / 86 Time 2:00 AM/PM
Describe Sampling Point West corner by fence

Well Depth 24.5 ft. below MP Casing Diameter 2" galvanized Inches
Depth to Water (below MP) 18.34 ft. Date 11 / 6 / 86 Time 9:56 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at 22 ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: Grayish water - film Odor: Unidentified Odor
Note any Sampling Problems: _____
Note any Cleaning performed in field: cleaned conductivity + pH + water level probe with methanol
Samples Collected: VOA; 1-set TCT 3 bottles for Cal-Lab

EVACUATION / STABILIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
13:42	6.94	1670	12.0		2 gallons	
13:45	6.93	1700	12.0		3 gallons	
13:48	6.95	1690	12.0		4 gallons	
13:50	6.96	1680	12.0		5 gallons	

Pumping start time 13:35 WL _____
Pumping stop time 13:50 WL _____

Comments: During development, oily-like film in water

Form completed by: PMM Witnessed by: JWB

SAMPLING INFORMATION

Sampling Point MW-2 Project Interplastic
Location Minneapolis, Minnesota W.O.# 4231 86-363

Sample ID # 11061312 Date Sampled 11 / 6 / 86 Time 1:12 AM/PM
Describe Sampling Point Northwest corner of site, near large tanks

Well Depth 21.5 ft. below MP Casing Diameter 2" galvanized Inches
Depth to Water (below MP) 17.43 ft. Date 11 / 6 / 86 Time 9:48 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method: ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at Bottom ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: Dark gray Odor: Background - strong
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: VOA - 1 set TCT + 3 bottles for Cal-Lab East

EVACUATION / STABILIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
1251	6.58	6300	13.0		1½	
1256	6.64	4000	12.5		3	
1259	6.66	3600	13.0		3 3/4	
1302	6.64	3500	12.5		4½	
1306	6.67	2900	12.5		5¼	
1309	6.64	3000	12.5		6	

Pumping start time 1248 WL _____
Pumping stop time 1310 WL _____

Comments: Very dark in color, black suspended material cleared slightly during development

Form completed by: JWB Witnessed by: PMM

SAMPLING INFORMATION

Sampling Point MW-3 Project Interplastic
Location Minneapolis, Minnesota W.O.# 4231 86-363

Sample ID # 11061440 Date Sampled 11 / 6 / 86 Time 2:40 AM/PM
Describe Sampling Point Near northeast corner of site, near gas pump

Well Depth 25 ft. below MP Casing Diameter 2" galvanized inches
Depth to Water (below MP) 19.71 ft. Date 11 / 6 / 86 Time 9:56 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 3 bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at 22 ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: Cloudy Odor: Unidentified Odor
Note any Sampling Problems: --
Note any Cleaning performed in field: TCT cleaned pH probe with methanol
Samples Collected: VOA - TCT - 1 set + duplicate + 3 bottles for Cal Lab East

EVACUATION / STABILIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
2:26	6.72	1680	14.0		1 gallon	
2:28	6.67	1675	14.0		2 gallons	
2:32	6.73	1710	14.0		3.5 gallons	
2:36	6.72	1705	14.0		4.5 gallons	
2:38	6.74	1700	14.0		5.5 gallons	

Pumping start time 14:20 WL _____
Pumping stop time 14:38 WL _____

Comments: _____

Form completed by: PMM Witnessed by: JWB

SAMPLING INFORMATION

Sampling Point MW-4 Project Interplastic
Location Minneapolis, Minnesota W.O.# 4231 86-363

Sample ID # 11061210 Date Sampled 11 / 6 / 86 Time 12:10 AM/PM
Describe Sampling Point 6½" well near underground storage tanks

Well Depth 40 ft. below MP Casing Diameter 6½ inches
Depth to Water (below MP) 16.40 ft. Date 11 / 6 / 86 Time 9:44 AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least 2½ bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at 20 ft. below MP.
Tubing (type: Bev-e-line), (new or previously used) was used to collect all samples (yes no) and all field measurements (yes, no). Tubing used only for N/A

Sample Appearance: Clear with black suspended material Odor: Strong background odor
Note any Sampling Problems: N/A
Note any Cleaning performed in field: Keck pump and water level probe cleaned with methanol
Samples Collected: VOA - 1 set for TCT + 3 bottles for Cal Lab East

EVACUATION / STABILIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)
1027				16.41	Pump In	0
1031				16.65		~ 1.5
1044	6.92	1760	12.5	16.67		~ 1.5
1054	7.05	1755	12.0	16.68		~ 1.5
1108	7.08	1750	12.0		50	~ 1.5
1126	7.05	1755	12.0	16.70		~ 1.5
1149	7.02	1750	12.5	16.69	105	~ 1.5

Pumping start time 10:28 WL _____
Pumping stop time 11:52 WL _____

Comments: Well developed with Keck pump - clear when pumped collecting water in white 55 gallon drum supplied by Interplastics approzimately 110 gallons pumped bailer set at ~25 when sampling

Form completed by: JWB Witnessed by: PMM

SAMPLING INFORMATION

Sampling Point Bailer Blank Project Interplastic
Location Minneapolis, Minnesota W.O.# 4231 86-363

Sample ID # 11061235 Date Sampled 11/ 6 / 86 Time 12:35 AM/PM
Describe Sampling Point Near MW-2

Well Depth N/A ft. below MP Casing Diameter N/A Inches
Depth to Water (below MP) _____ ft. Date / / Time _____ AM/PM
Discharge Rate = _____ gpm x 0.00223 = _____ cfs.
At least _____ bore volumes have been evacuated before sampling.

Sampling Method : ☐ Tap ☐ Submersible Pump ☒ Bailer Teflon ☐ Other _____
Pump intake or bailer set at _____ ft. below MP.
Tubing (type: _____), (new or previously used) was used to collect all samples (yes, no) and all field measurements (yes, no). Tubing used only for _____

Sample Appearance: Clear Odor: Strong-background plastic-like
Note any Sampling Problems: _____
Note any Cleaning performed in field: _____
Samples Collected: VOA 1 set for TCT + 3 bottles for Cal Lab East

EVACUATION / STABILIZATION TEST DATA

Time	pH (Units)	Temperature Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (Nearest 0.01 ft)	Cumulative Volume of Water Removed From Well (gallons)	Pumping Rate (gpm)

Pumping start time N/A WL _____
Pumping stop time _____ WL _____

Comments: Strohs water used to collect bailer blank

Form completed by: JWB Witnessed by: PMM

APPENDIX B

CHEMICAL RESULTS AND METHODOLOGY

twin city testing
corporation
662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSIS

PROJECT:

REPORTED TO: Twin City Testing
Attn: Gil Gabanski
662 Cromwell Avenue
St Paul, MN 55114

DATE: November 20, 1986

FURNISHED BY:

COPIES TO:

LABORATORY No. 4400 87-724

INTRODUCTION

This report presents the results of our analysis of samples received by this laboratory on November 6, 1986. The scope of our work was limited to analyzing the samples for acetone and styrene using gas chromatographic techniques.

SAMPLE IDENTIFICATION

TCT Number 27651 - MW-4
TCT Number 27652 - Bailer Blank
TCT Number 27653 - MW-2
TCT Number 27654 - MW-1
TCT Number 27655 - MW-3
TCT Number 27656 - MW-3 (Duplicate)
TCT Number 27657 - Lab Blank

METHODOLOGY

The samples were analyzed using direct injection techniques on a Perkin-Elmer Sigma 300 gas chromatograph equipped with FID. Acetone and styrene were verified using a Perkin-Elmer 3920 equipped with FID and a chromatographic column of different polarity.

Compounds were identified by column retention time and quantified by peak area comparisons to those of known standards using a VG laboratory data system.

RESULTS

The results are listed in Table #1.

REMARKS

The samples will be held for thirty days from the date of this report then discarded unless other arrangements are made.

TWIN CITY TESTING CORPORATION

Chris Bremer
Asst. Laboratory Supervisor

Harold D Fisher
Chromatography Group Leader

CB/HDF/ms

TABLE #1

Sample Identification	(mg/L) Acetone #1	(mg/L) Acetone #2	(mg/L) Styrene #1	(mg/L) Styrene #2
MW-1 #27654	ND	ND	22	P
MW-2 #27653	28	P	ND	ND
MW-3 #27655	ND	ND	ND	ND
MW-4 #27651	ND	ND	ND	ND
MW-3 (Duplicate) #27656	NA	NA	NA	NA
Bailer Blank	NA	NA	NA	NA

ND = Not detected, lower detectable limit is 1 mg/L

P = Present, not qualified

NA = Not analyzed

mg/L is equivalent to parts per million

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE: MND | 02 SITE NUMBER: 00615/336

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Interplastic Corporation	2015 N.E. Broadway

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Minneapolis	MN	55413	Hennepin	053	05

09 COORDINATES: LATITUDE 44°59'52.0" | LONGITUDE 93°13'52.0"

10 TYPE OF OWNERSHIP (Check one): ☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
12 14 90 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	~1965 (BEGINNING YEAR) _____ (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☒ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
Steven Anderson-Meger	Hydrologist	MPCA	(612) 297-1784
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Fred Campbell	Hydrologist	MPCA	(612) 297-1799
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Ivan Levy	Vice President	1225 Wolters Blvd Vadnais Heights, MN	(612) 481-6860
Dave Dunnomon	Plant Manger	2015 N.E. Broadway Minneapolis MN	(612) 331-6850
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	9:00 a.m.	

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Steven Anderson-Meger	MPCA	(612) 297-1784

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Gary Krueger	MPCA		(612) 296-6139	4 1 91 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006151336

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER (Specify): _____
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)

- TONS: _____
- CUBIC YARDS: _____
- NO. OF DRUMS: 2,620

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☒ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☒ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☒ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
(SOL)	SOLVENTS			Total capacity of on-site
PSD	PESTICIDES			
(OCC)	OTHER ORGANIC CHEMICALS			storage tanks is ~131,000 gallons
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOC	Acetone	67641	Tank	up to 450	mg/l
OCC	Styrene	100425	Tank	up to 1,300	mg/l

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS	N/A		FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g. State files, sample analysis, reports)

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MNR | 02 SITE NUMBER: 006151336

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION | 02 ☒ OBSERVED (DATE: 12/85) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 9,000 | 04 NARRATIVE DESCRIPTION
Ground water contamination first observed in 1985. Continued monitoring has shown various levels of organic compounds in ground water at the site.

01 ☐ B. SURFACE WATER CONTAMINATION | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
Unknown

01 ☐ C. CONTAMINATION OF AIR | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
Reports of releases of DCPD to air from by-passes in air pollution control equipment.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
None Reported

01 ☐ E. DIRECT CONTACT | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
Portion of facility where tanks are located are paved and fenced.

01 ☐ F. CONTAMINATION OF SOIL | 02 ☒ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) | 04 NARRATIVE DESCRIPTION
On-site soils contaminated as a result of spills of hazardous materials.

01 ☐ G. DRINKING WATER CONTAMINATION | 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 9,000 | 04 NARRATIVE DESCRIPTION
City of St. Anthony Municipal Well #3 is within 3 miles from the site.

01 ☐ H. WORKER EXPOSURE/INJURY | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
unknown

01 ☐ I. POPULATION EXPOSURE/INJURY | 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
Citizen complaints of odors and illness from failure of air pollution control equipment and spills of hazardous materials on-site.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	00615 1336

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

N/A

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

N/A

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

N/A

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 9000 — 04 NARRATIVE DESCRIPTION

Monitoring wells on-site show ground water contamination from leaking tanks and/or spills of hazardous materials.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

Allegations of migration of hazardous materials to adjoining properties as a result of spills on-site.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☒ OBSERVED (DATE: 12/17/90) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Air pollution control equipment which scrubs offgases from reactors, shut down briefly and resulted in direct discharge to sanitary sewer causing solvent odors in nearby buildings.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

Allegations of past on-site burial of hazardous waste drums.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006151336

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☒ C. AIR				MPCA Air Quality
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☒ D. TANK, ABOVE GROUND	131,000 gallons Total	14 Tanks Total
☒ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER
- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE
~1-2 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☒ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Main portion of facility, where above ground tanks are located is paved, with control of runoff to on-site storm drains. Back portion of site, where there have been reported spills and buried drums, is partially paved and unfenced.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☐ NO

02 COMMENTS Main facility is fenced however rail spurs where tank cars are parked for unloading materials is unfenced.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sampling analysis, reports)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006 15 1336

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as appropriate)	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS	ENDANGERED	AFFECTED	MONITORED
	A. ☐	B. ☐	C. ☒
	D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE
A. 2.2 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 9,000

03 DISTANCE TO NEAREST DRINKING WATER WELL 2.2 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
15-20 (ft)	S-SE	15-20 (ft)	_____ (gpd)	☐ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and drainage)

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES	COMMENTS	☐ YES	COMMENTS
☒ NO		☒ NO	

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION, DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Mississippi River	☐	1.5 (mi)
	☐	_____ (mi)
	☐	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. ~20,000 NO. OF PERSONS	B. ~80,000 NO. OF PERSONS	C. ~180,000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION
¼ - ½ (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
unknown	.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The surrounding area is primarily light industrial/commercial property. Within ¼ mile of site is densely populated urban development.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006151336

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☒ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
~50 (ft)	(ft)		

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE		
		SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
-3 (in)	2.5 (in)	%		%

09 FLOOD POTENTIAL	10
SITE IS IN >500 YEAR FLOODPLAIN	☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)	12 DISTANCE TO CRITICAL HABITAT (for endangered species)
ESTUARINE N/A OTHER	N/A (mi)
A. (mi) B. (mi)	ENDANGERED SPECIES:

13 LAND USE IN VICINITY

DISTANCE TO:			
COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AG LAND
A. 1/10 (mi)	B. 1/4 - 1/3 (mi)	C. N/A (mi)	D. (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

See SSI report

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MNA	006151336

II. SAMPLES TAKEN Field samples not taken at time of SSI

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF MPCA
(Name of organization or individual)

03 MAPS ☐ YES ☐ NO

04 LOCATION OF MAPS

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Data used for SSI and HRS scoring taken from monitoring reports submitted by Interplastic to MPCA.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis reports.)

MPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006151336

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
Interplastic Corporation	
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
1225 Wolters Blvd	
05 CITY	**06 STATE** / **07 ZIP CODE**
Vadnais Heights	MN / 55110

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

PARENT COMPANY *(If applicable)*

08 NAME	09 D+B NUMBER
10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
12 CITY	**13 STATE** / **14 ZIP CODE**

08 NAME	09 D+B NUMBER
10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
12 CITY	**13 STATE** / **14 ZIP CODE**

08 NAME	09 D+B NUMBER
10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
12 CITY	**13 STATE** / **14 ZIP CODE**

08 NAME	09 D+B NUMBER
10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
12 CITY	**13 STATE** / **14 ZIP CODE**

III. PREVIOUS OWNER(S) *(List most recent first)*

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

IV. REALTY OWNER(S) *(If applicable; list most recent first)*

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MNA	00615133 6

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER
Same as owner								

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE	08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE	14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006151336

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
same as owner/operator	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006151336

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MAD	006151336

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Area where past spills have occured is now partially paved

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Site is partially Fenced

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling analysis, reports)

MAPCA Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006 151 336

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

Site [redacted] was added to State of Minnesota's Permanent List of Priorities (PLP) in December 1990 for complete RI/FS.

MPCA Hazardous Waste Division and City of Minneapolis has also been involved with investigations of hazardous waste disposal at the site since 1985.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Files

EPA FORM 2070-13 (7-81)